

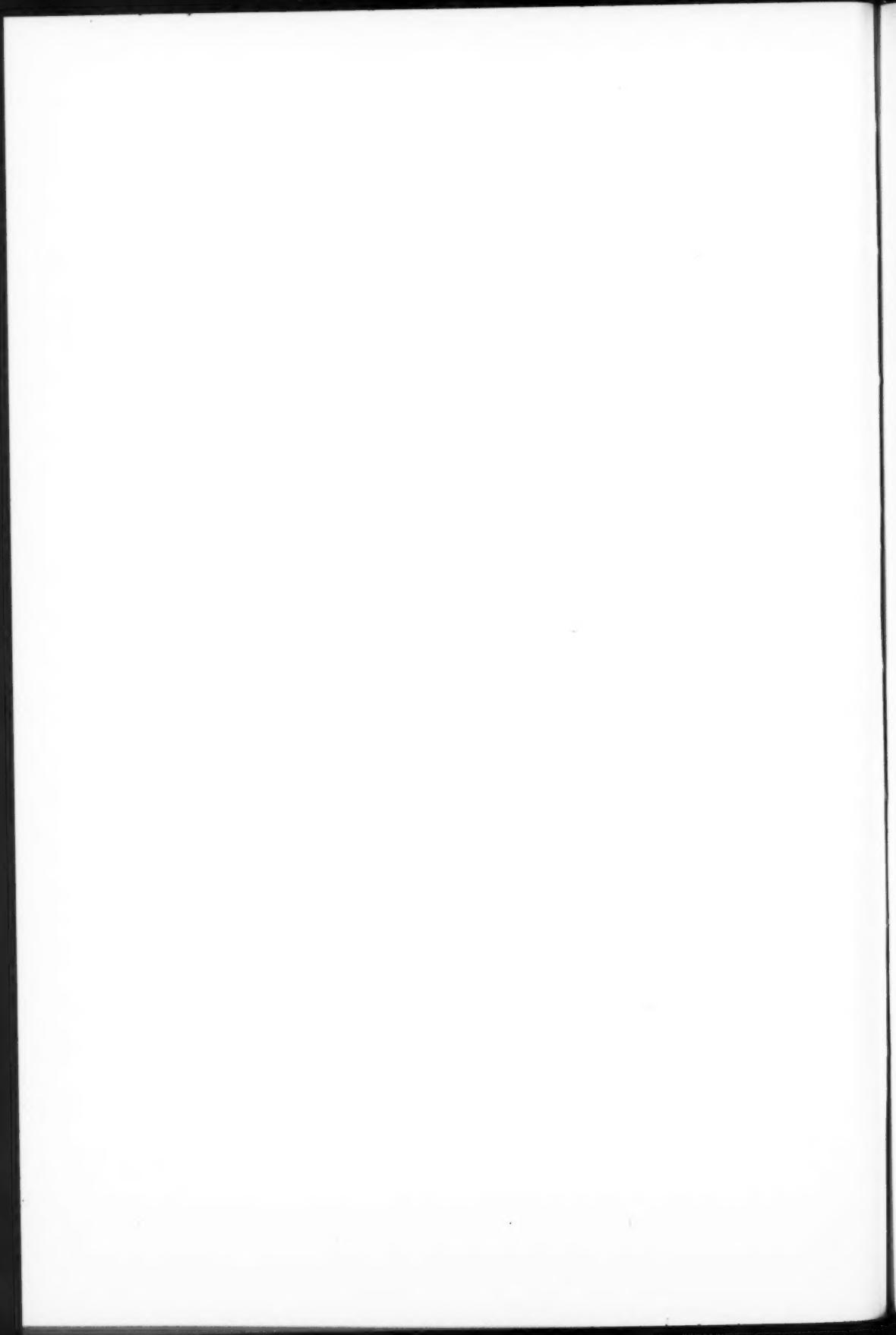
Dental

Abstracts

a selection of world dental literature

AMERICAN DENTAL ASSOCIATION

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A selection of world dental literature

Lon W. Morrey, D.D.S., editor

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Better interproximal amalgam preparations—faster

J. O. Thorpe. *J.N.Carolina D.Soc.* 43:182-184 April 1960

Inasmuch as increased rotary speeds have largely eliminated the undesirable features of vibration, heat, and slow, inefficient removal of tooth structure in cavity preparation, the dentist can reduce his armamentarium and instrumentation to a minimum, without violating the principles of good cavity preparation.

A technic is described which utilizes three burs (made specifically for either Page-Chayes or air turbine handpieces) and only one hand instrument. The instruments are: (1) no. 37 in-

verted cone bur, used for cavity opening; (2) no. 957 end-cutting bur, for extending proximal box gingivally and buccolingually; (3) no. 4 or no. 6 round bur, for removal of remaining caries, and (4) no. B SSW scaler, for finishing proximal enamel walls.

1. The occlusal slot is cut to the marginal ridge with the no. 37 bur (Fig. 1) and the outline of the proximal box is roughly established.

2. The marginal ridge is removed with the scaler. The no. 957 bur is used to extend the buccal, lingual and gingival walls to the predetermined outline form (Fig. 2A, 2B). In finishing the proximal walls, the dentist places the shaft of the bur parallel or slightly diagonal (if a keystone proximal box shape is desired) to the long axis of the tooth, and moves the bur occlusogingivally, repeating the movements until sufficient proximal box flare is obtained.

3. The no. 37 bur is used to widen the occlusal slot and isthmus (Fig. 3). The no. 957 bur is used to square the gingival wall and the buccogingival and linguogingival angles. The remaining caries is removed with a no. 4 or no. 6 round bur and

Figure 1 Opening the Class II cavity with the no. 37 inverted cone bur. A = outline of completed cavity preparation. B = outline of initial opening. Arrows indicate position and movement of bur

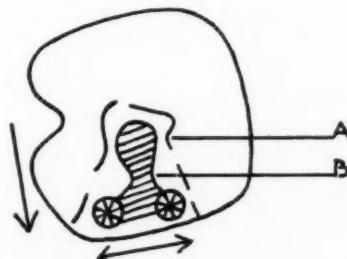


Fig. 1



Fig. 2 A

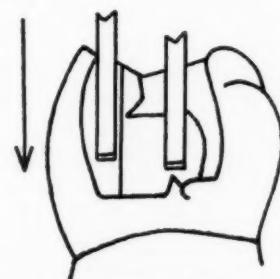


Fig. 2 B

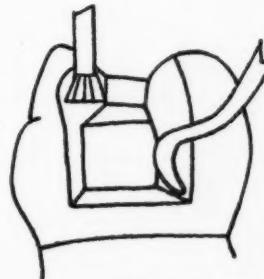


Fig. 3

Figure 2A, 2B Occlusal and proximal views illustrating position and direction of no. 957 bur to accomplish proximal flares

Figure 3 Preparation is finished with no. 37 bur and no. B SSW scaler

the enamel walls are finished with the scaler.

The technic requires minimum armamentarium and instrumentation, facilitates the operation, and reduces patient apprehension.

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Pain due to galvanism

James M. Mumford. *Brit.D.J.* 108:299-301

April 19, 1960

When dissimilar metals are placed in the mouth, they constitute, with the fluids present, an electric cell. Such cells have been blamed for pain, and dentists have hesitated to place in one mouth restorations made from dissimilar metals, even when to do so would otherwise be desirable. This disadvantage has been exaggerated, partly because pain has been wrongly attributed to galvanism and partly because galvanic pain ceases of its own accord. On the other hand, too little attention has been paid to galvanic pain which occurs during operative procedures.

Saliva and the tissue fluids of tooth, bone and soft tissues are electrolytes. Therefore, if gold and amalgam restorations are placed in the same mouth, an electromotive force of about 0.5 volt arises.

Why is pain felt in the tooth? In the soft tissues, current can spread out, but in the tooth its path is restricted. Therefore, the current density is greater in the tooth than in the soft tissues. Since nerve stimulation depends on current density, pain is felt, if at all, in the tooth. If there is no pain, presumably it is because the current density in the innervated area is not sufficient to stimulate the nerve endings.

Any pain from galvanism is brief, however, because the current rises rapidly to its peak at the

moment of contact, and then gradually falls because of polarization. When the metals in the mouth are separated, the cell recovers from polarization and stimulation may be repeated. It has been suggested that pain ceases because of protective changes in the dentin and pulp, or because of the decrease in electromotive force as the cell ages.

No instance of pain has been observed with two metal restorations not in contact. When restorations of dissimilar metals are in constant contact, pain does not occur repeatedly, but may occur at the moment of first contact.

Occasionally, galvanism is produced between a restoration and dental instruments. The patient may wince and fidget when the dentist sees no reason why the patient should do so.

An amalgam restoration was being inserted in a lower molar. When an amalgam packer was placed on the restoration, the patient sometimes winced, but sometimes did not. It was found that only when the packer was in contact with both the amalgam and the saliva ejector at the same time did the patient wince, presumably because the circuit thus was completed. The saliva ejector should be made of plastic material.

A cavity was being prepared in an upper left molar. Each time the handpiece was brought into position, the patient winced although the bur had not even touched the enamel. The dentist began to think the patient was uncooperative, but then noticed that bringing the handpiece into place was accompanied by a movement of the mirror in such a way that its metal back made contact with an amalgam restoration in a lower molar. This caused pain. By avoidance of this contact, the operation proceeded satisfactorily.

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The use of the Cornell Index to determine the correlation between bruxism and the anxiety state: a preliminary report

Jack L. Thaller. *J. Periodont.* 31:138-142
April 1960

A pilot study was undertaken to determine: (1) if, among patients with periodontal disease, those with bruxism had a higher score in a personality inventory than those without bruxism, and (2) if a degree of correlation existed between bruxism and the anxiety state. The Cornell Index, which has shown itself effective in indicating the presence of the anxiety state, was administered to 50 women patients with periodontal disease. Twenty-five of the patients were known to have the habit of bruxism, and 25 did not.

A significant difference of 3.10 in the scores of the two groups on the Cornell Index was found. A positive correlation exists between the anxiety state and bruxism. Patients with bruxism have a higher score on the Cornell Index than patients without bruxism. The difference between the two groups is significant statistically and cannot be accounted for by sampling errors.

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Clinical examinations of the gingivae in school children between 7 and 13 years old

Luiz Cesar Pannain. *Rev. A. Paulista Cir. dent.* 13:239-241 Sept.-Oct. 1959

In an unpublished report on the gingival condition in 243 school children between 7 and 13 years old examined by the author [who died in 1959], the fact was emphasized that in many patients in whom periodontitis occurs in later life, the initial symptoms (gingival lesions) were observable in childhood and early adolescence. These specific lesions may appear as slight or

severe irritative conditions, congestion of the capillary and other blood vessels or edemas of greater or lesser degree, with or without pain.

In school children between 7 and 13 years old, the eruption of the permanent teeth often is associated with gingivo-alveolar irritation, inflammation and pain. The absence of pain may be detrimental to tooth eruption, because without this warning signal the patient may not be aware that he requires immediate professional care until serious and often irreparable damage has been done to the periodontal tissue.

Gingival lesions were found in 48 (19.2 per cent) of the 243 school children examined, and in 21 (43.7 per cent) of 56 school children between 8 and 18 years old who were later examined. These figures reveal the importance of making the examination of the gingival tissues an integral part of the dental care for children.

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Approach to systemic treatment of periodontal disease

Arthur Jean Held. *Parodontol., Zürich* 14:1-9
May 1960

According to European terminology, the term *parodontopathie* designates all pathologic processes which affect the periodontium. These processes may be differentiated into three pathogenic mechanisms: inflammatory, degenerative and neoplastic.

Clinical experience has demonstrated that regardless of its type, periodontal disease can assume two different forms characterized by the topographic regions. In certain instances, the disease is localized around isolated teeth, whereas in others it involves the entire dentition and all the investing and supporting tissues. These two different forms must be caused by different etiologic factors. In generalized periodontal lesions, the causative factors are various disturbances involving the entire organism, whereas in localized periodontal lesions the causative factors are active only in the oral cavity.

The belief that periodontal disease always is the result of multiple factors was expressed first by Oscar Wespi and later by Samuel Miller. Some of these factors are predisposing and others are

determining. This belief is not only valid for the etiology of periodontal disease but also for the therapy.

All experienced periodontists know that in spite of the methodic application of the local therapeutic resources at their disposal, the generalized form of the disease may continue in its progressive change. The clinical course of the disease, however, can be slowed down by eliminating the local irritating factors which play an accelerating role in the pathologic process.

Accurate knowledge of the etiologic factors and proper differentiation between local and systemic causes will permit establishing whether, and to what extent, a generalized treatment may be envisaged, and consequently will allow formulation of the prognosis.

On the basis of the still fragmentary information in regard to epidemiology and geographic distribution of periodontal disease (especially the forms characterized by atrophy of periodontal tissue), it may be assumed that certain racial factors play an important part. Mediterraneans (dolichocephalic people with a short stature, slightly pigmented skin and dark eyes) are more prone to the generalized form of periodontal disease (periodontolysis) than Nordics (dolichocephalic people with a tall stature, light skin and blue eyes). The same holds true for Asiatic Indians who are more susceptible to the disease than members of the yellow and black races. Heredity is implicitly linked to the racial factor. In certain races, susceptibility to periodontal disease represents a hereditary trait.

Another factor probably associated with civilization (therefore an individually acquired factor) also should be taken into consideration. This is, as Schwarz has demonstrated, the absence of functional stimulation during the period of growth and development which renders the structural development of the periodontium deficient and ultimately leads to inadequate attrition and to occlusal anomaly.

It is possible that to these racial and functional influences, other factors can be added such as deficiencies in proteins, minerals, vitamins, and so forth, as well as various forms of intoxications. This aspect of the periodontal problem, however, has not been adequately investigated.

Systemic treatment of periodontal disease ap-

plied at the periodontic department of the Dental School of the University of Geneva, Switzerland, consists of the following procedures:

1. Preliminary treatment such as tooth extraction, scaling, correction of unsuitable crowns, and fillings.

2. Re-establishment of the functional equilibrium; selective grinding, modification of the centric occlusion and vertical dimension, orthodontic treatment, splinting, and prosthetic replacing of missing teeth.

3. Direct treatment of the periodontal lesions by curettage and various surgical interventions.

4. Reactivation and consolidation of the periodontal tissue. By reactivation is meant all measures designed to improve the trophism of the periodontal tissue whose capacity of reaction and resistance has been reduced by action of the multiple factors previously analyzed.

A combined therapy (administration of calcium, vitamins A and C) might be indicated after surgical intervention involving the periodontal membrane, the gingiva and the alveolar bone.

Injections of placenta extracts and bone extracts (obtained from young animals) have been tested, but the results were not unanimously positive. It seems that in instances of certain inflammatory torpid lesions, a favorable tissue reparation can be obtained by using placenta or bone extracts.

Various authors have suggested that autovaccination should be used in instances of inflammatory periodontal disease. This suggestion obviously is based on the theory that these forms of periodontal disease are caused by infections of the gastrointestinal tract. This theory, however, has not been verified, and the results of autovaccination generally have been unsatisfactory.

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Leukocytes in the epithelial attachment

Daniel A. Grant and Balint Orban. *J. Periodont.* 31:87-95 April 1960

Photomicrographs are offered to affirm the presence of neutrophilic granulocytes in the epithelial attachment, a finding reported frequently by microscopists.

The frequent presence of neutrophilic granulocytes in the epithelial attachment could be a significant observation. It may aid in the search for the mechanism of pocket formation. The epithelial attachment may be a pathway for the penetration of diffusible bacterial products, as shown by the presence of neutrophilic granulocytes in its intercellular spaces. An evaluation of this possibility is important with regard to: (1) the vitality of cementoblasts subjacent to the epithelial attachment, (2) the destruction of the gingival fiber apparatus in this region, and (3) the subsequent apical proliferation of the epithelial attachment.

The neutrophilic granulocytes could have reached the epithelial attachment by random movement or they could have been attracted by diffusion of bacterial products from the pocket. It can be presumed that bacterial toxins penetrate to the gingival lamina propria where the characteristic inflammatory response has been observed. Except in abscesses, microorganisms have been found only rarely and fleetingly in the affected

tissues. There is considerable circumstantial evidence, however, for a causal relation between microorganisms and gingival inflammation. Microorganisms always are present in periodontal pockets. They are increased in numbers and in percentages of certain types in the presence of inflammatory periodontal disease. Microorganisms whose products are capable of destroying tissue have been isolated from periodontal pockets. Injection of toxic bacterial products from such microorganisms has resulted in gingival changes similar to those seen in periodontitis.

There exists a presumptive relationship between bacteria or their products and typical periodontal inflammation. In view of such evidence, the theory of toxin penetration via the epithelial attachment to subjacent and adjacent connective tissue is probable. The cytological response in epithelial attachment can be interpreted as a reaction to the presence of diffusible bacterial products.

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Endodontics

Investigation of the form, number and direction of the roots in 4,252 teeth

Franklin Pineda. *Rev. A.D. Mexicana* 16:241-253
July-Aug. 1959

A knowledge of the anatomic features of the roots of a given tooth is essential for the correct biomechanical preparation on which effective filling and sealing of the canal depend. Various authors have demonstrated that the external conformation of a tooth determines the form, arrangement and curvature of the root and its canal.

To obtain information on the kinds of root or roots present in each tooth type, 4,252 extracted teeth were investigated. The largest proportion of straight roots were found in upper central in-

cisors, followed by the distal roots of lower molars, the roots of lower central incisors and lower lateral incisors. The number of straight roots decreases in posterior teeth and the number of roots with distal apical curvatures increases.

Elbowlike curvatures occur frequently in the roots of upper cuspids. Lower second bicuspids and upper lateral incisors most frequently exhibit apical curvatures of the roots, either lingual or palatal. The highest proportion of double curvature has been found in the distovestibular roots of upper molars, upper first and second bicuspids and lower cuspids.

Distal curvatures appear most often in the mesial roots of lower molars, the mesiovestibular roots of upper molars, and, occasionally in the roots of upper bicuspids.

The results of the investigation demonstrated that all tooth types, without exception, occasionally present specific root curvatures (either single or double), and that these curvatures may be either distal, mesial, labial or lingual, palatal or

vestibular. Each tooth, therefore, should be individually investigated by interpretation of roentgenograms taken from several angles before endodontic treatment is attempted.

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**Relation between clinical
and histopathological findings
after sedative treatment of dental pulp**

Sakon Takigawa. *Shikwa Gakuho* 59:38-65
Nov. 1959

In an effort to determine which drug is best suited for treating teeth with vital pulps, 124 teeth in hospitalized patients were treated with either camphorated parachlorophenol, phenol, eugenol or creosote. Clinical symptoms were studied for various periods and the teeth then were extracted and studied histopathologically. The findings were as follows:

1. The drug with the greatest sedative effect is phenol, followed by creosote, eugenol and camphorated parachlorophenol in that order.
2. Of the teeth which, before treatment, were sensitive to cold water, 92 per cent reacted favorably to treatment. Of the teeth which were sensitive to warm water before treatment, only 50 per cent reacted favorably to treatment.
3. Treatment was least effective in teeth in which acute suppurative pulpitis had been diagnosed clinically; treatment was ineffective in 31 per cent of teeth in this category.
4. The highest rate of tissue destruction was obtained with phenol, the lowest rate with eugenol.
5. Of the teeth with inflamed pulps which exhibited a tendency to heal, camphorated parachlorophenol was most effective (50 per cent). The other drugs were effective in only about 30 per cent of such teeth.
6. In 17.2 per cent of the teeth treated with phenol, the inflammation increased. The use of the other three drugs resulted in lesser rates of inflammation.

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**The incidence of bacteremia
in endodontic manipulation**

I. B. Bender, Samuel Seltzer and Morris Yermish. *Oral Surg., Oral Med. & Oral Path.* 13:353-360
March 1960

This study was undertaken to determine whether bacteremia can be produced by endodontic procedures. The subjects consisted of 50 patients ranging in age from 19 to 78 years. None of the patients had received antibiotics or sulfonamides within one month prior to endodontic treatment. In Group A (26 patients), endodontic manipulation was confined to the root canals. In Group B (24 patients), endodontic manipulation purposely was done beyond the confines of the root canals. Blood samples were taken immediately before endodontic manipulation, immediately afterward, and ten minutes postoperatively.

All preoperative blood samples were negative for bacterial growth. All blood samples taken ten minutes after endodontic manipulation exhibited no growth.

No demonstrable bacteremia appeared immediately after endodontic manipulation in any of the 26 patients in Group A. In Group B, in which endodontic manipulation was performed beyond the apex of the root canal, 6 (25 per cent) of 24 blood samples were positive for growth. Three of the six teeth involved had vital pulps, and three had nonvital pulps.

The results of this investigation suggest that endodontic manipulation should be done within the confines of the root canals to prevent a bacteremia which can produce a focal infection. The results further show that endodontic procedures are safer than exodontic procedures, even if endodontic manipulation is performed beyond the confines of the root canal.

In a patient with a history of valvular heart disease, endodontic treatment would be the method of choice whenever possible. The procedure should be such that the reaming and filing are done with utmost care to prevent perforation of the apex. Such patients should be premedicated with parenteral antibiotics.

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The vomer flap

Fred Squier Dunn. *Am.J.Surg.* 98:821-825
Dec. 1959

Any therapeutic procedure for congenital cleft involving the bony palate should have three objectives: (1) closure of the palate, (2) restoration of the normal mechanics of speech, and (3) insurance of normal growth of the maxillary and facial bones.

In the past, the various technics used strove to accomplish the first and second objectives, with little consideration for the third. This was so universal that the typical dished-in, contracted, post-surgical facies of an adult with cleft palate was accepted by many surgeons as the norm. The maxilla was stunted by the surgical interventions, not by any intrinsic factor in the original deformity; the basic cause of stunting is the introduction of scar tissue subperiosteally, which occurs in the von Langenbeck operation. The stunted maxilla often created a worse deformity than the original defect. Some adults with cleft palate, who had never been operated on, were infinitely better off and far better able to adjust to society than their contemporaries who had undergone operations for cleft palate. The cleft palate which has not been operated on develops its maxilla and facial bones normally.

The only way of closing the defect in the hard palate at a reasonably early age without causing loss of growth of the maxilla and facial bones is by the vomer flap technic. Operations in which the vomer flap technic is used result in practically no shock to the child, in contrast to the shock resulting from operations based on modified von Langenbeck technics. After the vomer flap operation, orthodontic treatment is minimized and usually is limited to treatment of the teeth in the immediate region of the cleft. The soft palate is soft and flexible, and the palatal arch provides a

proper bed for the tongue, so necessary for phonation.

The vomer flap technic is the method of choice for clefts involving the hard palate. The mouth can be restored to a relatively normal condition at two or three years of age when the child is learning to speak, and the child can be assured of growing to adulthood with a face that nature intended.

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Malignant tumor of the maxillary sinus treated by removal of the upper jaw

H. G. Tabb. *Laryngoscope* 69:119-130 May 1960

Radical surgery, followed by irradiation, still offers the best chance for survival of patients with malignant tumors of the maxillary sinus.

A few decades ago, postsurgical mortality was extremely high, immediately from shock and blood loss, later from meningitis which usually was treated by irradiation.

Without radical excision of the malignant growth, however, irradiation gives rise to serious complications, frequently requiring surgical interventions as radical as those originally contemplated.

Total removal of the involved maxillary sinus, also implying total removal of the upper jaw, is necessary if cure is to be achieved.

The Weber-Fergusson incision is used to expose the facial surface of the upper jaw and the entire maxillary bone, followed by removal of the maxillary sinuses, ethmoids and orbital contents, which should be excised *en bloc*.

To obtain the best possible surgical result, the palate has to be split at the midline, and the upper jaw and portions of the zygomatic arch and ethmoid bones have to be separated from their attachments.

The sphenoidal, frontal and posterior ethmoids are curetted and fulgurated because they can be considered as suspicious areas. In certain instances, an eye must be sacrificed if there exists doubt in regard to malignant involvement.

The entire surgical cavity then is irrigated with a cancerocidal solution.

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**Reduction of injection pain
by changing the shape of the needle point**

K. Helbig. *Deut.Zahnärztebl.* 14:204-206
April 8, 1960

The applicability of syringes used in dental practice depends much more on the shape of the needle point than on the quality of materials used in the production of syringe and needles. Most of the injection needles available on the German market have blunt or obtusely angled points which frequently cause severe injection pain.

The different types of injection needles produced in Germany have the following points: (1) evenly ground at various angles; (2) concave or wavy ground; (3) gliding ground; (4) transversally ground (Huber point), and (5) concavely ground from different sides. In addition, there are needles with points ground by the dental practitioner himself.

The meaning and purpose of these various shapes of needle points encountered in the German dental practice are mainly to facilitate an easy penetration into oral and facial tissues, thereby decreasing, but not eliminating, the pain of injection.

Tracksdorf (1954) recommended for dental injections only syringes which have a small-angle needle point. He emphasized: "The more acutely angled the point of the needle is the less will be the pain caused by injection." According to Tracksdorf, the optimal angle of a needle point suitable for dental practice is 15 degrees (Fig. 1).

Clinical experience has shown that the finely sloped point of an injection needle is easily bent if it suddenly contacts osseous or cartilaginous tissue. The cautious dentist, therefore, must avoid bending the point of the needle during injection, thereby decreasing the risk of causing unnecessary pain.

If a moderate pressure with the tip of the index

finger is applied to the mucous membrane immediately above the site of injection, the subsequent pain not only is moderated but the flow of the solution into the tissue is effectively directed, thereby a favorable anesthesia is facilitated.

From a histological point of view, Müller (1950) recommended that injections into the gingival tissues should be performed from an acute-angled position and slowly introduced with an extremely fine needle point.

Injection needles with such a fine point, however, are easier damaged than those with a blunt point, and have to be changed more frequently. Schwarzkopf (1954) advised that the customary needles should be used for only from eight to ten injections. Needles with a fine and acute-angled point can be used for only five injections and even then must be inspected carefully to note whether bending or other defects have occurred.

In regard to the various types of needles, available in Germany, the following experiences have been noted in clinical practice:

1. Needle points with a concave or wavy grinding (Fig. 2) provided injections causing only mild pain.

2. Needle points with a gliding grinding (Fig. 3) also have proved to be quite satisfactory.

3. The Huber point (Fig. 4) showed a definite improvement over the other needle types available in Germany. This point, centralized on the longitudinal axis, pierced all oral tissues easily even if the dentist applied only a slight finger pressure. Needles with the Huber point permitted a straight and smooth injection in contrast to all the other needles having sloping points which caused divergences from the direction intended.

Several authors recommend that practicing dentists should grind the points of the injection needles themselves. Mischol (1955) required

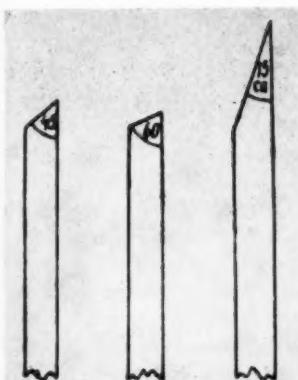


Figure 1 Needle points with various grindings. Left: Customary grinding (about 45 degrees). Center: Blunt grinding (not recommended for dental injections). Right: Optimal grinding, 15 degrees



Figure 2 Needle point with wavy grinding

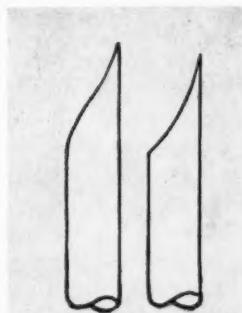


Figure 3 Needle points with gliding grindings. Left: Preferred grinding. Right: Customary grinding

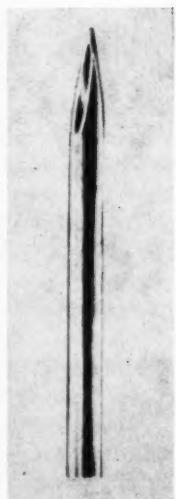


Figure 4 Needle with Huber point

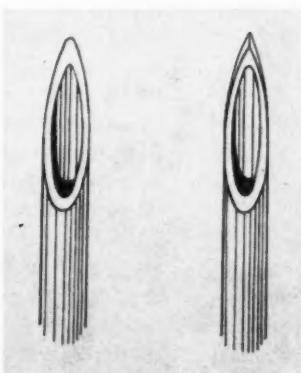


Figure 5 Left: Needle point with longitudinal grinding. Right: Needle point with lateral grinding (according to Walter and Mischol)

that needles used in dental practice must have an angle-ground point of from 20 to 30 degrees.

Injection needles, produced in the United States and imported in small quantities to Germany, seem to penetrate the oral tissues better than those manufactured by the German dental industry. It appears advisable, therefore, that German dentists who prefer to grind the points of their injection needles themselves, should follow the American design.

The complaint of patients who have suffered severe pain during injection, as well as the constant fear of encountering such pain, will be lessened if the dentist will use needles with points suitably ground by himself. These needles will glide into all oral tissues almost without using pressure, and none of the patients will experience pain during the injection.

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Germany*

**Premedication in oral surgery,
especially prior to general anesthesia**

Erika Dibold. *Fortschr.Kief.Ges.Chr.*
5:35-38, 1959

By a careful selection of the most suitable premedicant prior to general anesthesia required for difficult oral surgical interventions, the anesthetist and surgeon today are able to avoid intraoperative and postoperative complications.

In most patients in whom oral surgery is indicated, premedication can never be a matter of routine. These patients belong to extreme age groups ranging from infants with cleft lip, cleft jaw or cleft palate, to senescent persons affected by various heart, kidney or liver diseases and by feebleness of body and mind associated with senilism or senility. In such patients, a seemingly insignificant error in selecting the premedicant may lead to the most severe complications.

Anesthetists and surgeons, therefore, should visit the patient at least one day before the operation is scheduled, to become acquainted with the individual characteristics of the patient, with his complete history which must include the threshold of pain, psychic and physical experiences as well as the clinical picture and the pathologic symptoms.

During such a visit, the following aspects should be covered:

1. The patient's confidence has to be gained and his willingness to cooperate be obtained. The psychic preparation of the patient is an important factor in the undisturbed course of anesthesia and operation.

2. The patient should be engaged in a free and easy conversation concerning his family, environment and experiences including any abnormal sensations, moods or acts, observed by himself, and these should be noted.

3. The various effects of drugs previously used should be evaluated.

These steps will permit the selection of the most suitable premedicant and subsequent general anesthetic, thereby bringing about optimal results. Among the premedicants available are pentobarbital, hexobarbital, and secobarbital; acetophenetidin, codeine, meperidine, morphine and methadone. Thoughtless administration of premedicants, however, may result in undesirable

side effects such as "hang-over," languor, headache, nausea, diarrhea, and skin rashes, or collapse in hypersusceptible patients. Overdosage results in stupor, lowered body temperature, feeble heart action, depression or even paralysis of the respiratory centers. Some of the premedicants may be habit forming.

Nordwestdeutsche Kieferklinik, Universitätskrankenhaus, Hamburg-Eppendorf, Germany

**Toxicity of epinephrine
used in dental anesthesia**

F. Mraz and T. Garbulinski. *Czas.stomat.*
12:585-594 Aug. 1959

Physicians frequently warn dentists not to use local anesthetic solutions containing epinephrine in patients with heart disease.

During the last ten years, eight deaths occurred in Poland which probably were caused by injection of local anesthetic solutions. These deaths, however, were all attributed to the local anesthetic agents used and not to epinephrine, and none of these deaths occurred in dental practice.

The amount of epinephrine used in dental anesthesia, minute as it is, is sufficient to increase the local efficacy of the anesthetic solution to obtain satisfactory anesthesia, whereas it is insufficient to produce a severe systemic result.

Death may occur coincidentally with any dental or medical treatment, just as it can occur during eating, sleeping, working, and so forth. If a fatality should occur after the use of epinephrine in dental anesthesia of a known cardiac patient, under the present Polish laws, the dentist could be held responsible, although epinephrine has been used safely in millions of anesthetic injections in severely ill patients. Therefore, it seems unfair to have dental practitioners forced to assume such responsibility only for empirical reasons.

Cardiac patients, like any other poor-risk patients, develop dental or oral infections and toothache associated with carious processes which require adequate dental treatment. Local anesthesia in these patients is less hazardous than general anesthesia. Clinically, the use of a local anesthetic containing a minute epinephrine con-

centration has proved a safe procedure, and the dental profession, therefore, should not be deprived of the opportunity to employ it, without the added responsibility of having the procedure condemned by medical experts.

The clinical evidence and experience is overwhelming that the use of anesthetic solutions containing small amounts of epinephrine can be used safely for dental anesthesia for any patient who is physically able to withstand the contemplated oral surgery or dental treatment.

Because local anesthetics without epinephrine, even the most recently developed, generally are less effective, the present restriction on the use of anesthetic solutions containing epinephrine in dental anesthesia of poor-risk patients should be withdrawn by amending the present laws.

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Cross infection and the disposable dental needle

Edward C. Dobbs and Frank A. Dolle.
J.D.Med. 15:26-28 Jan. 1960

The studies of Foley and Gutheim (1956) strongly incriminated dental local anesthesia technics in the transmission of serum hepatitis. Since publication of their report, many articles have appeared in dental journals warning of the dangers of serum hepatitis from unsterile dental procedures. Sterilization of the dental needle always has been an uncertain procedure. The outer side of the needle is readily cleansed by brushing with a detergent solution and can be sterilized by any reliable technic. This is not true for the inner surface, the lumen. Here, collected organic and inorganic debris cannot be removed satisfactorily; the debris acts as an insulator to prevent the ready destruction of the bacteria by chemical agents or induced heat.

The authors agree with Autian and Brewer (1958) and Tinker (1956) that the use of a disposable hypodermic needle would help to reduce the possibility of cross infection. Disposable needles and even syringes are being more widely used by physicians, particularly in hospitals and clinics, where the expense of sterilizing and processing is as much as the price of disposable needles.

Recently, two dental manufacturers have introduced disposable needles for use in dental anesthesia. Carpule needles are available in lengths of 1 and 1½ inches and in 25 gauge and 27 gauge. The Carpule needle is protected by a plastic sheath, and is marketed in a sealed can. The needle and sheath are sterilized with ethylene oxide vapor. The needle has a plastic hub which locks it onto the syringe. The plastic hub will not withstand boiling; this precludes reuse of the needle. Plastic and metal aspirating syringes are available for use with disposable needles.

A new "Monojet 400" disposable needle is available in 25 gauge in two lengths—1½ inch and 1¾ inches. A plastic hub, which supports the needle, is screwed on to a regular cartridge-type syringe in such a manner that the anesthetic solution does not come in contact with the plastic hub. The hub of the syringe must be sterile to prevent contamination of the end of the needle which is inserted into the cartridge.

Use of disposable needles assures (1) a properly prepared and sterile anesthetic solution, (2) a sharp needle, and (3) a needle free from contamination. There may be a monetary advantage in the disposable type needle. The introduction of sterile, disposable dental needles is another forward step in dental anesthesia.

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Nausea and vomiting in the immediate postanesthetic period

Andre Smessaert, Claire A. Schehr
and Joseph F. Artusio, Jr. *J.A.M.A.*
170:2072-2076 Aug. 22, 1959

Factors that might determine the incidence of nausea and vomiting were sought in a study of 1,602 patients of all ages recovering from general anesthesia. Observations during the period immediately after recovery from anesthesia were recorded.

The over-all incidence of vomiting was 24.3 per cent; the incidence in male patients (21.0 per cent) was significantly different than in female patients (27.2 per cent). The incidence of vomiting did not vary significantly with body type (Kretschmer's classification) in either male or

female patients. The incidence of vomiting varied significantly with site of operation in both sexes. Head and neck operations were followed by a high incidence of emetic symptoms; this is in accord with the findings of other investigators.

There appeared to be a constant upward trend in the incidence of vomiting as the duration of the procedures increased, but the incidence was of only borderline significance.

There was a significant relationship between the incidence of vomiting and the presence of a gastric tube; among patients without gastric tubes the incidence was 25.3 per cent and among those with tubes, 15 per cent. The incidence of vomiting with endotracheal intubation was 24.4 per cent as against 22 per cent without intubation. With the use of relaxants the incidence was 21.5 per cent and without relaxants, 24 per cent.

The present study indicates that nausea and vomiting occur in 23.3 per cent of patients receiving ether and in 24.1 per cent of those receiving cyclopropane. In those receiving thiopental and nitrous oxide anesthesia it was 11 per cent, far lower than after any other agent. The incidence of postanesthetic vomiting tended to be lower among older patients. A higher incidence of vomiting among female patients was observed in nearly all circumstances, regardless of the anesthetic agent used.

The duration of anesthesia was not important in relation to postoperative nausea and vomiting, but there appeared to be an upward trend as duration increased.

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Use of muscle relaxants for endotracheal anesthesia in oral surgery

H. Scheunemann. *Deut.zahnärztl.Zschr.* 14:1619-1622 Nov. 15, 1959

The value of endotracheal anesthesia for all oral and maxillofacial surgical interventions involving administration of a general anesthetic agent for prolonged periods or for operations to be performed in regions adjacent to the glottis or trachea, has been generally accepted.

Attempts to pass anesthetic gases through the nasopharynx behind surgical packs inserted in the mouth are only partly successful. The ever-present hazards of aspiration of foreign matter and respiratory obstruction remain.

The endotracheal technic eliminates these and other hazards completely, especially if muscle relaxants with brief effects are used. In addition to these advantages, the use of muscle relaxants during endotracheal anesthesia reduces hemorrhage in the operative field, makes surgical haste unnecessary and provides the best possible means for inducing artificial respiration in instances of sudden respiratory failure.

The technic of endotracheal anesthesia is not difficult to acquire but requires the accurate synchronization of the sensitive faculties of the patient and the operator's faculty of sight, hearing, and understanding the deep muscle patterns and the significance of the time element.

When these qualifications are present, and they are by no means uncommon, a rapid, nontraumatic and accurate intubation anesthesia will be obtained.

Endotracheal anesthesia, supplemented with the muscle relaxant drug "Pantolax" (succinylcholine chloride), has been found useful for oral surgical procedures in patients with normal anatomic structure of the maxillofacial region, operated on at the Oral Surgical Clinic of the Dental College, Medical Academy of Düsseldorf, Germany. From 0.75 to 1.0 mg. of Pantolax per kilogram of body weight, intravenously injected, obtained complete relaxation of the maxillofacial musculature within 20 seconds.

Administration of Pantolax is contraindicated in instances of micrognathia or ankylosis of the temporomandibular joint and prior to resection of the lower jaw.

Muscle relaxing agents, however, should be administered only by dentists and anesthetists who have had sufficient special training and experience in the application of these drugs, and at dental offices or clinics where facilities are available for immediate treatment of emergencies that may be associated with their use.

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Extractions

Tooth extractions in instances of systemic disease associated with acute oral infection

Viliam Jäger. *Českoslov.stomat.* 60:96-100
Feb. 1960

According to many authors, the presence of an acute oral infection associated with a systemic disease contraindicates tooth extraction. According to most dental textbooks, all interventions in the oral cavity should be postponed until the localized infection has subsided.

Acute oral infections may be associated with the following diseases: avitaminosis, diabetes, erysipelas, hemophilia, influenza, nephritis, polycythemia, syphilis, tuberculosis, and with the following conditions: cardiac disturbances, exanthematous eruptions and malignant tumors occurring at distant sites.

Although simultaneous appearance of systemic disease and acute oral infection increases the hazard of complications after tooth extraction, a series of more than 3,000 tooth extractions was performed on patients with systemic disease associated with acute oral infection at the Dental Clinic of the Hospital in Ounz, Czechoslovakia, between 1950 and 1959.

The preponderant use of general anesthesia in this series may account in part for the comparatively small number of postoperative complications, although there was no statistically significant difference between complications after tooth extractions performed under general anesthesia and those occurring after extractions done under local anesthesia.

Experience with insertion of sulfonamide tablets in the alveoli of the lower posterior teeth immediately after extraction demonstrated that the sulfonamides play a more important part in uneventful healing than the antibiotics (penicillin).

In the entire series, no death occurred.

Immediate tooth extraction, without regard to the presence of acute oral infection, appears to be the treatment of choice in patients with acute abscesses in the oral cavity or those who have pericoronitis.

Dental Clinic, Senica nad Myjavou, Ounz, Czechoslovakia

Blood loss in the surgical removal of teeth

John J. Connors. *Ann.Den.* 18:74-76
Dec. 1959

The blood loss was determined in ten patients undergoing multiple extraction of teeth under general anesthesia in the operating room of the Metropolitan Hospital, New York. To determine the amount of blood loss, a basin was filled with a measured amount of sterile water, and this water was used to clean the suction tubing and instruments during the operation. After the operation was completed, the remaining water was suctioned into the suction bottle and the amount was measured volumetrically. The difference between the original volume and the final volume was considered the gross blood loss.

Extractions were done in each quadrant after a mucoperiosteal flap was reflected. A conservative alveoloplasty was performed, with curettage, rasping of rough bony protuberances, and closure of the incision with an adequate number of sutures for good coaptation of tissues.

Of the ten patients, six were women and four were men. They ranged in age from 23 to 60 years. The number of teeth extracted in each patient ranged from 13 to 27. The duration of the operations varied from 47 to 140 minutes.

Blood loss ranged from 160 to 700 cc. Excluding the one patient who experienced a blood loss of 700 cc. after a 140 minute operation for the

extraction of 27 teeth, nine patients had an average blood loss of 274 cc.

There is a positive correlation between the duration of operation and the amount of blood loss.

The amount of blood loss during odontectomies has been underestimated; it is comparable to that lost during many general surgical procedures.

Six of the ten patients were discharged from the hospital the day after surgery and had uneventful recoveries. Two were retained three days postoperatively. One patient was retained for two days. The patient who had lost 700 cc. of blood received two transfusions of whole blood before she was considered for discharge.

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Malignant tumors and tooth extractions

H. Brabant and R. J. Werelds. *J. Estom., Lisbon* 6:3-7 Sept.-Oct. 1959

Awareness of a possible relationship between tooth extractions and the development of malignant oral tumors led the authors to review ten case reports which had appeared in the literature and three case reports, previously unpublished, recorded at the Dental Institute of the University of Brussels, Belgium, during the last two years.

A comparative study of these 13 case reports permitted classification of the tumors into three categories, as follows:

1. Malignant tumors occurring in the immediate neighborhood of the extraction wounds. In these instances, tooth extraction either had modified the tumor evolution or had hastened the development of malignancy in three patients.

2. Malignant tumors probably were present prior to tooth extraction. Recognition and diagnosis of the malignant changes were the result of a careful examination of the tissue adjacent to the extraction wound and of the entire oral cavity in seven patients.

3. Malignant tumors developed after tooth extractions in three patients.

Malignant oral tumors (Group 2) occurring prior to tooth extraction were either primary tumors or metastases from primary tumors which had appeared in other regions of the oral cavity or in other, more distant, regions of the human body.

Malignant oral tumors (Group 3) occurring immediately after tooth extraction constitute the most interesting type of neoplasms but they are extremely rare.

Coleman (1861) suggested the existence of a "cancerous diathesis" capable of producing malignant changes in cicatrized tissues even after a minimal trauma as a possible causative factor. This hypothesis—which seems not improbable—lacks scientific verification.

The possibility that malignant oral tumors occasionally change their clinical course and are aggravated by tooth extractions does not contraindicate the removal of teeth which cannot be saved. However, such a possibility makes it necessary to proceed cautiously and with the least possible trauma to the surrounding tissues. Each patient should be individually considered and treated only after consultation between an oncologist and the dentist.

In general, the oral cavity of each patient should be in the best possible condition before treatment of oral tumors is attempted.

The appearance of suspicious tissues in a seemingly healthy alveolus after tooth extraction is an indication for an immediate biopsy. The possible traumatizing effect sometimes produced by tooth extraction on the course of malignant oral tumors may be related to a failure to apply proper treatment to a precancerous lesion.

Dental practitioners also should be aware that certain forms of toothache, usually quite severe, for which no definitive cause can be found, may be early symptoms of a malignant change in the oral tissues.

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Incorporation of radiopaque materials into denture plastics

Don C. Bursey and John J. Webb.
U.S. Armed Forces M.J. 11:561-566 May 1960

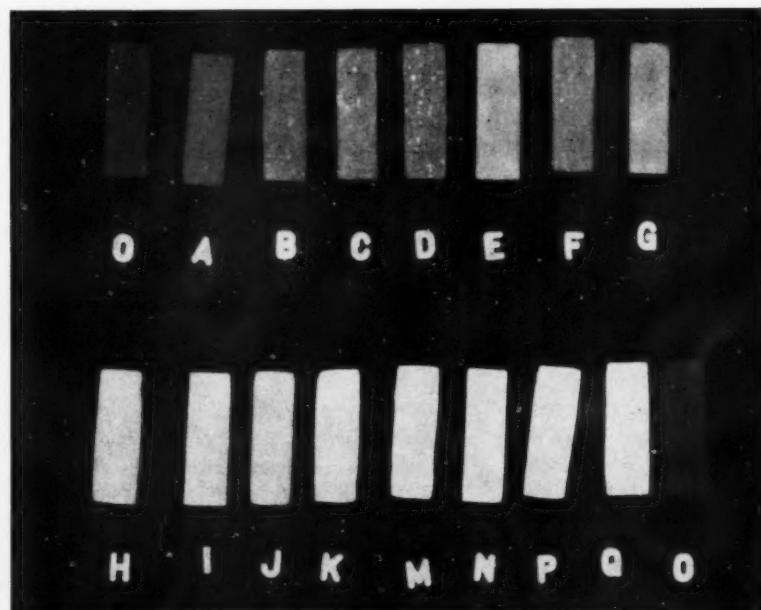
Traumatic facial injuries of patients wearing partial or complete acrylic dentures sometimes are complicated by fragmentation of these dentures. Acrylic resin is not radiopaque, and these fragments are potentially dangerous if they are lodged in the soft tissues of the body. Recognition of such fragments would be possible if a radiopaque substance were incorporated into the denture base material. Such a substance must: (1) be nontoxic; (2) be incorporated in sufficient quantity to produce radiopacity of the acrylic resin; (3) not adversely affect the physical properties of the acrylic resin, and (4) not change the color of

the acrylic resin or cause the color to be unstable.

Fourteen radiopaque materials were combined with acrylic resin to determine their effects on color change, compatibility and radiopacity. The materials studied were silver alloy, lead acetate, finely ground gold, gold leaf, magnesium oxide, bismuth subcarbonate, barium sulfate, Hypaque, 70 per cent Diodrast, Micropaque, 35 per cent Diodrast, Hypaque sodium, Hypaque-M, and barium fluoride.

Each radiopaque material was mixed in varying proportions with the acrylic resin powder. In each instance, the ratio of polymer to monomer was 2.5 Gm. to 1 ml. The blocks, after being cured by accepted procedures, were polished and examined.

Of the materials tested, only barium fluoride was found to be satisfactory in all three criteria. Barium fluoride caused a notable radiopacity when the concentration was approximately 1.9 per cent. As the concentration of barium fluoride was increased, the radiopacity increased (illustration). The radiopacity of the blocks varied with the thickness of the block as well as with the concentration of barium fluoride. Little color change was noted when the acrylic blocks contained up



Acrylic resin blocks containing increasing amounts of barium fluoride: O, control; A, 1.9 per cent barium fluoride; B, 3.8 per cent; H, 16.6 per cent; K, 26.4 per cent; Q, 50 per cent

to 29 per cent barium fluoride. Although there was some color change at very high concentrations, the 50 per cent concentration is still suitable.

Barium fluoride appears to be a promising radiopaque material to incorporate into acrylic resin. However, further tests are indicated before

it can be adopted for clinical use. These tests must include toxicity and tissue compatibility tests, and physical property tests for such qualities as hardness, fragility, shrinkage, absorption and stability.

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Pedodontics

**Is premedication necessary
for handicapped children?**

Albert Green and Mark J. Mendelsohn.
J.Den.Children 27:40-45 March 1960

This study was undertaken to determine the need for premedication and the effectiveness of the principles of pedodontic management developed at Columbia University School of Dental and Oral Surgery. The subjects consisted of 85 patients with cerebral palsy and other handicapping conditions; 83 were children ranging in age from 3 to 16 years old. Many of the children had more than one handicap, and almost all of the children had emotional problems associated with their physical conditions.

All patients were seen for routine dental care. The children were trained to accept and participate in the dental treatment, as they were evaluated to determine the necessity, if any, for premedication.

Three visits were required, during which the child and the dentist became conditioned to each other. The investigators attempted to establish warm relationships and rapport with all the patients and with the parents if present. At the first visit, a history was taken and preliminary examination completed. At the second visit, any information lacking in the history was obtained. An

oral roentgenographic examination was made. At the third visit, diagnosis, treatment planning and prophylaxis were completed. At this visit, the child's sensitiveness to pain was determined by Libman's method (1934). At subsequent visits, the authors proceeded with routine dental care until completion of the treatment. Where premedication was indicated, a drug or combination of drugs was prescribed.

The indications for premedication were greatly below initial expectations. Premedication was administered to only seven patients; of these, only one patient (with athetosis) demonstrated a noticeable reduction of kinetic movements.

The slight indicated need for premedication was attributed to the successful application of principles of normal pedodontics to these handicapped patients. As a result of gradual conditioning and teaching of the patients, and the use of kindness, understanding and firmness by the operator, even severely involved athetoid patients could achieve that degree of relaxation and cooperation necessary for successful dental therapy, without premedication.

Drugs, if effective, should be used primarily for the purpose of establishing rapport between dentist and patient. Heavy dosages eliminate this possibility by dulling the patient's responses.

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Therapeutics.

**The teaching
of graduate and postgraduate pharmacology
and therapeutics for dentists**

Stanley C. Harris. *J.D.Educ.* 23:251-254
Dec. 1959

There is a growing disparity between the supply of, and the need for, competent teachers of pharmacology and therapeutics to dentists. Two types of education are needed: (1) intensive education for the career teacher and researcher in "dental pharmacology," and (2) refresher or postgraduate courses for clinicians. The first type of educational program would be the same as for any Ph.D. candidate in pharmacology, except perhaps the thesis requirement for an investigation in an area of dental interest. Only six pharmacologists devoted the major part of their activity to dentistry in 1958.

In most dental schools today, instruction in pharmacology and therapeutics is provided either by clinical instructors acquainted with current trends in medication, or by faculty members from the "medical" pharmacology departments. Courses range from one with a two-hour lecture without laboratory to some which have as many as 88 lecture hours and others which provide more than 100 laboratory hours. Too often, the dental student is taught with medical students by instructors unaware of the enormous increase in the dental applications and uses of drugs in the last 15 years. The drug industry estimates that dentists now write 6,000,000 prescriptions a year.

Refresher courses in therapeutics seem to be in considerable demand. The first eight hours of such a course could well be devoted to reiteration of fundamental principles of therapeutics, with stress on the therapeutic admonition *primum non nocere*—"first do no harm." The dentist should be taught to insist that, for any drug he plans to use, the following minimum items of information be made available: identification of the drug, com-

patibility with dental procedures and medical history or therapy, contraindications and toxicity. The types of drugs currently of chief clinical interest to dentists are local anesthetics, anti-infectives, analgesics, sedatives, hypnotics, ataraxics, general anesthetics, and anti-inflammatory agents. Misinformation about these types of compounds is widespread among dentists. If time permits, dental clinicians should be acquainted with the modifications in clinical syndromes or dental treatment plans dictated by concomitant medication under medical direction.

The average practicing dentist needs frequent up-dating of his knowledge about drugs. This updating is the profession's defense against the promotional activities of some sections of the drug industry. The dentist will be further rewarded for his study with the satisfaction of knowing he is neither denying his patients the benefits of progress nor unnecessarily or unwittingly endangering them.

Northwestern University Dental School, Chicago, Ill.

**Psychosedatives: tranquilizing agents,
their use and abuse
in dental and medical practice**

J. Schou. *Ugeskr.laeg.* 121:649-656
Aug. 23, 1959

Several of the ataractic or tranquilizing agents, especially meprobamate, have attained incredible favor among physicians, dentists and the general public.

In Denmark, with a population of about 4,500,000, approximately 24,478,269 Gm. of meprobamate alone was sold in 1958.

Suicide by ingestion of meprobamate was often attempted; 25 case reports have been published in the Danish literature in 1958, and 62 additional instances have been reported since.

Abstinence symptoms, similar to those occurring after addiction to barbiturates, occurred frequently after an abrupt withdrawal of meprobamate taken in doses of 1.2 Gm. daily.

The comatose intoxication which has been observed after ingestion of a total dose of 6 Gm. of meprobamate, is a dangerous condition which, when untreated, may prove fatal. When the con-

dition is treated similarly to barbituric acid intoxication, most of the patients survive.

In Denmark, many examples were observed of development of tolerance, excessive self-medication and psychologic and pharmacologic dependence on meprobamate. Euphoria may be one of the primary symptoms of meprobamatism.

Dentists and physicians should never prescribe more than 25 tablets (400 mg. each) for an individual patient, to prevent drug addicts from accumulating prescriptions from various practitioners. Prescriptions for meprobamate or any other tranquilizing or ataractic drug should not be issued to persons unknown to the practitioner.

Kristianiagade 12, Copenhagen Ø, Denmark

Treatment of malignant oral tumors with halogenated steroid derivatives

F. Scheiffarth and L. Zicha. *Deut.med.Wschr.* 84:1373-1375 Dec. 31, 1959

The effects of two recently developed halogenated steroid derivatives on malignant oral tumors (and other neoplasms which appeared to be influenced by disturbances of the endocrine secretion) were studied at the Medical Clinic of the University of Erlangen, Germany.

Drugs studied were "Ultandren" (Ciba), a 9-alpha-fluoro-11-beta-hydroxy-17-alpha-methyltestosterone, and "Broxoron" (Squibb), a 9-alpha-bromo-progesterone.

The most favorable therapeutic response was obtained in patients with malignant oral tumors showing signs of bone metastasis. The previously increased erythrocyte sedimentation and protein levels in the blood plasma returned to normal, and simultaneously a significant reduction in the alkaline phosphatase level occurred. There also was a decrease in pain and an increase in the mobility of the temporomandibular joint in all instances in which the joint had become impaired.

Eleven patients with metastatic carcinoma were treated with the halogenated steroid derivatives; five patients by administration of from 30 to 40 mg. Ultandren, and six patients who received gradually increasing doses, from 200 to 500 mg. Broxoron daily, for from three to five months.

Among the side effects observed were sudden gains in body weight, minor increase in blood

pressure (occasionally associated with fluid retention) and, in instances in which Broxoron had been used, hypocalcemia (which required the administration of potassium salts).

The therapeutic results of this investigation, however, do not permit definite conclusions as to the applicability of these new halogenated steroid derivatives for treatment of malignant oral tumors.

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Analgesic for teething

Brit.M.J. No. 5175:819 March 12, 1960

Q.—Would the application of an analgesic ointment, such as lidocaine, benefit infants who are teething? Would there be any danger in this?

A.—An analgesic jelly containing menthol, for rubbing on the gingivae during teething, has been on the market for many years and seems to afford some transient relief of pain. Ointments which contain a local anesthetic, such as lidocaine, are unlikely to have any ill effect unless used to excess, but their effect, if any, is transient. An oral analgesic such as acetylsalicylic acid 0.1 grain, repeated not more often than three times in 24 hours probably is as effective as anything.

Tavistock Square, London W.C.1, England

Tranquilizers and operative management

J.A.M.A. 171:1761-1762 Nov. 21, 1959

Q.—Should elective operations be deferred for eight days if a patient has been taking tranquilizing medication?

A.—"Tranquilizer" is a general term applied to a group of drugs which includes antihypertensives, sedatives, hypnotics and agents that produce emotional calmness without accompanying depression of alertness. A few, such as promethazine, are used in premedication and as a supplement during general anesthesia. Use of others should be discontinued before operation because of dangerous side effects.

When the patient has been taking a Rauwolfa alkaloid, severe hypotension and bradycardia may

occur on induction of anesthesia; therefore, medication should be stopped three or four days before elective operations. In emergencies, it is necessary to inject intravenously 0.5 mg. of oxyphenonium and 5 mg. of methamphetamine before induction of anesthesia.

The phenothiazine derivatives such as chlorpromazine, promazine and mepazine often produce postural hypotension and peripheral vasodilatation, which are hazardous during anesthesia. Use of these drugs, therefore, should be discontinued two days before elective surgical interventions. If hypotension occurs during anesthesia, Trendelenburg's position and large doses of phenylephrine are used. Promethazine is one drug in this group with practically no disturbing toxicity or side effects when administered in therapeutic doses. It can be safely used before and during anesthesia.

Meprobamate is a hydroxypropane derivative with significant sedative and muscle-relaxing actions. Rare instances of allergic reactions and nonthrombocytopenic purpura have been reported. No contraindication exists to its use immediately prior to operation. Hydroxyzine therapy may be continued until operation, and miscellaneous sedatives such as ethchlorvynol, ethinamate, glutethimide and methyprylon are safe for use immediately prior to operation.

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A myth about sulfa and aspirin

Joseph Molner. *Chicago Sun-Times* 13:9
April 4, 1960

There is a common belief that drugs containing sulfur and acetylsalicylic acid (aspirin) "weaken the heart." This is false. Neither drug damages the heart.

No doubt this myth got started because these drugs are used to combat certain conditions which may be injurious to the heart. The main condition is infection caused by streptococci which often leads to rheumatic fever. This in turn can cause inflammation of the heart muscles or valves.

The damage to the heart, therefore, is caused by infection and not by the sulfa drugs used to combat the infection, or aspirin used to combat the inflammation.

Modern sulfa drugs are an accepted and valuable aid in the treatment of streptococcal infections. It is true that certain sulfa drugs developed early produced a variety of toxic effects, some of which were so serious that the practitioner using them had to be extremely cautious, but even then heart damage was not one of the side effects observed.

The early drugs of the sulfa group sometimes depressed the blood count, caused high temperature, rashes and urinary tract complications; sometimes these drugs contributed to the formation of crystals or stones in the kidneys. Today, however, these complications are virtually nonexistent.

Acetylsalicylic acid continues to be an excellent drug for relief of pain and for treating rheumatic infections and the pain sensations associated with them.

It is true that some patients may suffer from side effects such as hemorrhages, rashes or upset stomachs when they take large quantities of aspirin and there may even be allergic reactions. Some of these side effects, particularly hemorrhage and stomach irritation, can be avoided by advising the patients to take the drug with food, milk or combined with an alkali. With proper handling, results are entirely satisfactory.

A resulting rash, either from the use of sulfa drugs or aspirin, is largely limited to patients who are particularly sensitive or allergic to these drugs. In such instances, the drugs should be avoided or other analgesic or anti-infective agents substituted.

Sun-Times Plaza, 401 North Wabash Avenue, Chicago 11, Ill.

Recurrent herpetic gingivostomatitis treated with gamma globulin

Sigurd P. Ramfjord. *Oral Surg., Oral Med. & Oral Path.* 13:165-169 Feb. 1960

Ten patients with recurrent herpetic gingivostomatitis were treated with intramuscular injections of pooled gamma globulin. Each of the patients gave a history of recurrent painful oral lesions extending over many years.

The dosages varied from 5 to 10 cc., and each patient was given a total of 10 to 25 cc. of gamma

globulin administered intramuscularly in the gluteal muscles. The period of observation after therapy varied from a few days to 18 months. Most patients were observed for from 6 to 12 months.

Nine of the ten patients temporarily experienced complete relief from their oral lesions after the therapy. These asymptomatic periods lasted in one patient for only a few days. In most patients, the asymptomatic periods extended for 2 to 3 months, and in a few patients for 6 to 12 months. When the oral lesions recurred, they were smaller and less painful than those which existed prior to administration of gamma globulin. The immunity to the herpetic lesions lasted for several months in the patients who had a relatively mild degree of the disease. The one patient who experienced no appreciable improvement had more severe, widespread and painful lesions than did the other patients.

More research is needed to determine proper dosage and duration of immunity. It appears advisable to give an initial dosage of 10 cc. of gamma globulin, and to repeat this dosage at intervals of 5 to 7 days until the symptoms are relieved.

A trial administration of 20 cc. of gamma globulin to a patient with peradenitis mucosa necrotica recurrens, a disease of unknown etiology, brought no change in the condition.

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The identification of tablets

J. D. W. Whitney. *Brit.M.J.*
No. 5165:50-51 Jan. 2, 1960

It would help the practitioner, in cases of poisoning or when in doubt of the nature of tablets in a patient's possession, if there was an infallible way of identifying tablets.

A method of identification of tablets by color is not practicable; often there is a variation in color between batches, there are not enough colors to go around, and often there is a variation between the color of the tablet and a printed color plate.

Some pharmaceutical firms—for example, CIBA—mark their own tablets with the firm's

name or initials. But as many tablets are white and of the same size, it often is difficult to tell them apart.

There should be a means of easy identification by a series of numbers, which could be common to that firm's products and stamped on the tablets, together with the firm's trade-mark or initials.

Capsules could be marked with a system of bands of different colors, somewhat akin to the system employed in the electronic industry to identify resistors. Each firm manufacturing capsules could have a fixed colored band for its exclusive use. A combination of width, number and color of other bands could identify the different capsules and the strengths.

British Pharmacopoeia, British Pharmaceutical Codex, and British National Formulary tablets could be identified by using combinations of letters and numbers in series, such as: B.P.A., 1-999; B.P.B., 1-999, B.P.D., 1-999, and so on up to B.P.Z. Initials could be stamped on one side of the tablet, and numbers stamped on the other side.

J. J. Hefferen (1959) identifies tablets on the basis of their physical characteristics. For busy general practitioners, this is impracticable. In the system proposed by the author, analysis would be necessary only in exceptional circumstances.

A tablet reference book or card index should be made available, in which all tablets manufactured would be illustrated if they are colored, or described in detail if they are white. This system should be kept up-to-date with addenda or new cards.

[The Science Committee has accepted the Whitney report unanimously on behalf of the Council of the British Medical Association.]

Tavistock Square, London W.C.1, England

Aphthous ulcers

S. C. Truelove and R. M. Morris-Owen. *Brit.M.J.*
No. 5178:1048 April 2, 1960

Cooke and Armitage (1960), in their double-blind clinical trial of tablets of hydrocortisone hemisuccinate sodium in the treatment of recurrent aphthous ulceration of the mouth, found that the difference in results between hydrocortisone

and the placebo was significantly less if the hydrocortisone was given before the placebo than if it was given after. This type of situation can be explained *prima facie* in one of three ways: (1) the drug is long-acting; (2) the effect is psychosomatic, or (3) the treatment carries a beneficial aftereffect because it has broken a vicious circle in the progress of the disease.

The first of these possibilities did not arise in the present study, because the small quantities of hydrocortisone given were utilized by the body during the day of use. The second and third possibilities, however, are worth consideration. Psychosomatic effects alone are unlikely to have accounted for the difference, because after four weeks when the patients received no treatment, the administration of placebo tablets had no effect in reducing the extent of ulceration in the mouth.

It seems more likely that the third possible explanation is the correct one. Many patients with severe aphthous ulceration were treated with daily doses of hydrocortisone tablets and a considerable proportion of patients were observed who were completely or almost completely relieved of aphthous ulceration for many months.

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Frequency of staphylococci resistant to penicillin and streptomycin in surgical patients

K. R. Eriksen and D. Dons. *Ugeskr. laeg.*
121:1553-1556 Oct 2, 1959

Staphylococcus pyogenes var. *aureus* was isolated from 1,136 patients with abscesses, boils or other septic infections occurring postoperatively in the oral or subcutaneous regions.

In the period from 1949 to 1958, the over-all frequency of penicillin-resistant staphylococci rose from 10 to 57.6 per cent, and the frequency of streptomycin-resistant staphylococci from 0 to 35.5 per cent.

In 814 (mainly dental) patients who had not had contact with hospitals and had not been treated with antibiotic agents, the frequency of penicillin-resistant staphylococci rose from 4.5 to 46.1 per cent, and the frequency of strepto-

mycin-resistant staphylococci from 0 to 22.6 per cent.

An increasing number of oral infections caused by staphylococci resistant to penicillin, streptomycin or both have been reported in recent literature, and in many instances other antibiotics or sulfonamides had to be substituted for these two antibiotic agents. The indiscriminate use of penicillin and streptomycin, therefore, should be discouraged in dental practice. The problem of staphylococci resistant to penicillin and streptomycin is a matter of intense concern primarily in postoperative infections occurring in hospitals. Resistant strains of staphylococci are frequently encountered in dental practice.

Streptomycin especially cannot be relied on in the treatment of oral infections unless the causative microorganisms are known to be sensitive to this antibiotic.

Kristianiagade 12, Copenhagen O, Denmark

Regional chemotherapy in head and neck cancer

Cancer Bul. 12:39-40 March-April 1960

Chemotherapy by perfusion technic for treatment of patients with cancer first was used at the M. D. Anderson Hospital, Houston, Texas, in December 1957, since which time 118 perfusions have been performed, 7 in patients with cancer of the head and neck.

Phenylalanine mustard and nitrogen mustard are the agents used. Two Sigma motor pumps and a bubble oxygenator are utilized. The blood vessels to be injected are isolated and the patient is given heparin intravenously, 2 mg. per kilogram of body weight. Fifteen minutes after injection of the heparin, the catheters are inserted and perfusion is begun. To prevent vasoconstriction when the vessels come in contact with the mustard, papaverine hydrochloride is used. The chemotherapeutic drug then is injected into the arterial side of the circuit. After perfusion is completed, the drug is washed out of the circuit with 500 cc. of dextran and then with 500 cc. of heparinized blood. After the catheters are removed and the vessels repaired, an antiheparin agent is injected and the wound is closed. Routine tracheostomy is performed before anesthesia, to facili-

tate anesthesia and insure maintenance of an adequate airway after operation. A Levine tube is used for feeding until the patient can swallow normally.

Local tissue tolerance has not been a major problem in patients with malignant lesions of the head and neck. For this reason, the dosage of mustard is calculated on the basis of the amount that theoretically could enter the general circulation and the degree of resultant bone marrow depression. The average leakage factor for the head and neck region is about 70 per cent. Bone marrow depression with pancytopenia occurred in all seven patients; there was one fatality.

All seven patients treated by perfusion had advanced disease which precluded hope of cure by conventional treatment. One patient had cancer of the tongue, one of the tongue and lateral pharyngeal wall, two had melanoma, two had carcinoma of the paranasal sinuses, and one had carcinoma of the gingiva.

Two patients showed distinct improvement, two, moderate improvement, and three showed no improvement. The perfusion technic appears to afford interesting possibilities as an adjuvant to conventional treatment for selected patients with cancer of the head and neck.

M. D. Anderson Hospital, 6723 Bertner Drive, Houston, Texas

Ascorbic acid supplementation:

I. Response of gum tissue

Harold B. Pierce, Chester A. Newhall, Susan B. Merrow, Merton P. Lamden, Cristina Schweiker and Alice Laughlin.
Am.J.Clin.Nutrit. 8:353-362 May-June 1960

It is generally recognized that pronounced changes occur in connective tissue, including gingival tissue, when there is prolonged deprivation of ascorbic acid. Many workers in the field assert that an adequate intake of ascorbic acid is necessary for the maintenance of healthy gingivae in man.

To provide information on the specificity of signs of ascorbic acid deficiency, a three year investigation was made of changes in specific abnormalities of gingival tissue (pitting, discoloration, bleeding, retraction, thickening, recession,

blunting and swelling) in relation to ascorbic acid intake and to white cell and serum levels of this vitamin.

The subjects were 49 normal, healthy girls 17 to 20 years old. The control group of 28 girls received placebos, and had an average daily dietary intake of ascorbic acid ranging from 47 to 60 mg. The test group of 21 girls was instructed to take four 100 mg. ascorbic acid tablets daily. A program was followed for noting failures in taking ascorbic acid and for assessing the actual daily intake. Girls in the test group had an average daily intake of ascorbic acid ranging from 340 to 412 mg. The gingival tissue in all subjects was observed and photographed over a period of two and a half years to determine whether one or more of the signs of ascorbic acid deficiency would respond to the supplement and whether these signs were correlated with each other or with the serum and white cell levels of ascorbic acid. The following statements summarize the major findings:

1. Under the conditions of this study, the signs studied are not specific for ascorbic acid deficiency.
2. The incidence of gingival bleeding and retraction was negligible. Thickening of the gingival tissue was prevalent and did not change with a supplemental intake of ascorbic acid over the 30 month period.
3. Although the incidence of pitting, swelling, blunting, recession and discoloration was high in both the test and control groups, there was no significant effect of the supplement on the average degrees of severity of these five signs, nor were the changes from the initial to the final periods significantly different between the test and control groups.
4. There was a tendency toward a negative correlation between pitting and the other five physical signs, and of a positive correlation between all physical signs except pitting unrelated to the ascorbic acid supplement. There were few significant correlations between changes in serum and white cell levels of ascorbic acid and changes in physical signs.

Thirty-seven references are cited.

College of Medicine, University of Vermont, Burlington, Vt.

**Control of tetanus spasms
by intramuscular injections of meprobamate**

H. Gnatzy. *München.med.Wschr.* 102:459-460
Feb. 26, 1960

Tetanus is a specific disease entity caused by *Clostridium tetani* and its soluble toxin, tetanospasmin. Tetanus is characterized by tonic spasms of the facial muscles, especially the masseter muscles, producing trismus and a general muscular rigidity and contractions.

The period of incubation is related to the speed with which dangerous amounts of tetanospasmin are released from the point of injury. Although tetanus seldom occurs after minor surgery such as dental or oral surgical interventions, a review of the pertinent literature reveals that about 20 per cent of dental patients in whom tetanus occurred have had a short incubation period (between two and five days). In 60 per cent of dental patients, an intermediate incubation period (between 6 and 15 days) was observed, whereas the remaining 20 per cent have had a prolonged incubation period (between 16 and 85 days). There was no relation between the site of the wound and the duration of the incubation.

Early complaints of dental patients are difficult to verify by oral examination. When the process becomes more pronounced, the patient's complaints are paralleled by observable changes in his physical behavior and the appearance of characteristic symptoms which may be classified under one or all of the following four basic categories:

1. Rigidity of the body's musculature, trismus, sardonic smile (*risus sardonicus*), difficulty in swallowing and mastication, backache, rigid abdominal wall, fixed extremities, retention of urine and constipation.
2. Muscular spasms, occurring at unpredictable intervals. The severity of the spasms are important in the determination of survival or death.

3. Accessory symptoms such as cloudy mind, abnormally high temperatures, profuse perspiration and overactive tendon reflexes.

4. Complications such as pneumonia, collapse of lung lobes, suffocation during spasms, brain hemorrhage, injury to teeth, tongue and oral soft tissues from convulsions, starvation, dehydration, and an extreme tendency to fractures.

In patients in whom comparatively mild attacks of tetanus occurred after minor surgical interventions, meprobamate (400 mg. every third hour) administered intramuscularly, effectively controlled the spasms. The use of this drug permitted the patients to be communicative and helped to identify and thereby to remove some of the visceral triggers that caused the spasms to persist.

Meprobamate administration made it possible to decrease the dose of barbiturates from 18-24 grains (1,160-1,550 mg.) to 2-3 grains (125-194 mg.). The care of dental patients with postoperative tetanus has been simplified and the morbidity and mortality greatly reduced.

Meprobamate has been found to be safe and harmless, and to date this drug appears to be the most effective agent for control of somatically evoked spasms of tetanus.

Städtisches Krankenhaus, Landshut, Germany

**Electrophoretic investigation
of serum proteins in patients
with Hodgkin's disease**

W. Krasnik and B. Baranowska.
Arch.Pol.Wewnet. 29:443-446 Oct.-Dec. 1959

Hodgkin's disease is the term given to a lymphomatous disease that is characterized by a wide spectrum of anatomic patterns. Based on histologic and clinical findings, these patterns have been divided into three types: paragranuloma, granuloma and sarcoma. In the oral cavity, the malignant tumor of obscure origin appears as a firm or fleshy mass; it usually ulcerates and increases rapidly in size causing destruction of adjacent tissues.

Electrophoretic investigations were carried out in 31 patients with histologically confirmed Hodgkin's disease involving the oral cavity. The Focal F. apparatus of the Arne Tiselius type was used to

determine the total amount of proteins. Electrophoresis was employed before, during and after treatment.

The total amount of proteins varied individually, depending on the stage of the disease and on the extent of the oral lesions. In 27 patients, a considerable decrease was observed in the albumin fraction. In four patients, however, the albumin levels remained within normal limits.

Spectrophotometric studies revealed that a decrease in the albumin level is closely associated with the advance of the disease, the generalization of the pathologic process and the spreading of the malignant lesions from the oral cavity to internal organs. A considerable increase in alpha and beta globulins occurs.

During and after treatment, the electrophoretic picture reveals a tendency toward normalization of the protein level, which normalization usually is paralleled by a significant improvement in the clinical condition, obtained either by surgery, irradiation or the use of alkylating agents such as nitrogen mustard, triethylene melamine or chlorambucil.

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Monostotic fibrous dysplasia of the skull involving the jaws

T. Kaniowski. *Pol. Przeg. radiol.* 22:297-305
Oct.-Dec. 1959

Monostotic fibrous dysplasia of the skull involving the jaws is an extremely rare and slow-growing pathologic process which occurs principally before puberty, although its presence usually is discovered much later. The disease may affect both jaws, with a slight predisposition for the upper jaw.

In roentgenograms, the maxillary tuberosities often exhibit specific hemienlargements which produce intraoral deformities without disturbing significantly the contour of the face.

These bone lesions often remain unnoticed by the patient for a long period, and are accidentally discovered by the dentist when examining the oral cavity.

In many instances the body of the mandible is affected, producing noticeable enlargements. When several facial and cranial bones are in-

volved simultaneously (polyostotic fibrous dysplasia), a lionlike facial expression (leontiasis ossea), may develop. This pathologic change, however, has been observed only rarely in instances of monostotic fibrous dysplasia.

Roentgenographic examinations of patients with this disease reveal the presence of skull and jaw lesions having a cystic appearance which usually are localized in the diploic structures and the outer layers of the cranial vault. The inner tables of the cranial bones usually remain intact, although the roentgenograms sometimes reveal blunt or dull outlines.

Dense osseous overgrowth and gradually increasing sclerosis showing a typical "ground glass" appearance are present in instances in which the disease has involved the facial bones. This roentgenographic sign is especially observable in patients in whom the disease is in its advanced stage. Although these bone alterations are characteristic of fibrous dysplasia of the skull, they are often mistaken for symptoms of bilateral and symmetrical hypertrophy of the facial and cranial bones, which also presents the features of leontiasis ossea.

During the course of the disease, bony overgrowth prevails in the base of the skull, whereas cystic or pseudocystic defects are seldom encountered. The proliferation of the osseous structure by fibrous tissue usually is associated with a decreased functional resistance, and at a later stage, the basilar impression syndrome may develop.

In many instances, roentgenographic differentiation between the monostotic and the polyostotic types of fibrous dysplasia of the skull is impossible. In the differential diagnosis, hyperparathyroidism (especially its postoperative form) and osteitis deformans (Paget's disease) should be considered. The age of the patient, the calcium level in the blood and the localization of the intracranial and intraoral lesions are the significant diagnostic factors. In dubious instances, however, only biopsy findings can confirm the diagnosis.

The treatment of fibrous dysplasia of the skull involving the jaws is not a simple procedure. In instances in which isolated and well-delineated lesions are present, surgical removal is no problem and should be performed immediately after the diagnosis has been confirmed. Diffuse enlarge-

ments of the cranial and facial bones, however, are difficult, if not impossible, to remove. Esthetic shaping of the distorted regions may be possible and is often indicated. The fibrocystic form of the disease may show associated involvement of unerupted teeth with concomitant cyst formation. Whenever possible, the cysts should be treated surgically, even though the approach may be complicated.

Three case reports on monostotic fibrous dysplasia of the skull involving the jaws are presented.

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Hypophosphatasia

J. C. Rathbun. *Helvet. paediat. acta* 14:548-553
May 1960 [in English]

In 1947, the author observed a patient with an unusually incomplete calcification of bone, resembling rickets but associated with decreased tissue phosphatase and serum alkaline phosphatase. Because of the extremely low tissue phosphatase, the condition was called hypophosphatasia. Subsequently other authors published 44 similar case reports. An incidence of hypophosphatasia of 1 in 100,000 births has been calculated. According to the patient's age at the disease's onset, three groups have been differentiated.

In Group 1, the symptoms appear before the child is six months old. These infants fail to thrive, are constipated and vomit frequently; convulsions and attacks of cyanosis may occur. Rickets, hypotonia, bony tenderness and irritability are common. There may be pathologic fractures, and craniostenosis and kyphosis may develop. However, the skull has a well-calcified base with an almost uncalcified vault.

In Group 2, the symptoms become manifest after six months of age but they are less severe. Premature loss of the deciduous teeth may occur, and genu valgum or other orthopedic defects may be observed. The metaphysial trabeculae are coarse and distorted. The skull appears normal but there are increased lacunar markings.

In Group 3, the disease occurs in adult life, characterized by fragility of the long bones with frequent fractures and mild osteoporosis, tooth

anomalies in shape, size and number, enamel hypoplasia, susceptibility to caries, and a stunted general growth.

In patients with hypophosphatasia, the serum alkaline phosphatase ranges from nearly zero to 40 per cent of the lower limit of normal. In severe instances, the serum calcium level is elevated whereas the serum phosphorus level remains normal.

Phosphorylethanolamine is found in the urine. This symptom simulates celiac disease, hypothyroidism and scurvy. Alkaline phosphatase will hydrolyze phosphorylethanolamine in vitro.

The histologic picture of bone resembles that of severe rickets. The disease obviously is hereditary.

Treatment is difficult to assess because of the disease's cyclic course. Administration of vitamin D appears to be dangerous because it may produce hypercalcemia. Cortisone has produced mineralization of bone in a few instances.

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Origin of clefts in the maxillofacial region

R. Büchner. *Wien. klin. Wschr.* 71:145-148
Oct. 1959

Heredity factors are frequently associated with the incidence of cleft lip, cleft jaw, cleft palate and oblique or transverse facial clefts. Congenital clefts in the maxillofacial region usually become manifest at two early stages of embryonal development; that is, either toward the end of the first month or toward the end of the second month.

Endometrial disorders occurring during pregnancy, however, also may induce the occurrence of clefts between the embryonic processes which normally unite to form the face.

Acute virus infections, avitaminoses, oxygen and glucose deprivation of the mother interfering with the adequate oxygenation of the fetal tissues are the four principal environmental causes of noninherited facial clefts.

Hemorrhages occurring immediately before formation and attachment of the placenta, and attempts to produce an artificial abortion as well

as degenerative, necrobiotic processes associated with a premature senescence of the pregnant woman may be considered as secondary causative factors in creating an unfavorable condition for nidation, thereby inducing a failure of union of the maxillary or lateral nasal processes in the embryo.

All these factors are capable of producing the same types of clefts in the maxillofacial region as those arising from known or undetermined inherited factors.

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Erythema multiforme

Helmut Hartmann. *München.med.Wschr.*
102:363-366 Feb. 19, 1960

The term "erythema multiforme" is used in different ways to indicate an allergic reaction of the skin and mucous membranes in the form of acute localized inflammation, papules, macules or vesicles. The distribution of the lesions usually is symmetrical and the sites most frequently affected are the hands, forearms, legs and feet, and the face and neck. The mucous membranes usually involved include those of the mouth and lips.

Some authors limit the use of the term "erythema multiforme" to cutaneous allergic reactions associated with viral infection or with diseases of unknown etiology and refer to identical cutaneous changes produced by reactions to drugs, food, microorganisms, and so forth, as "drug allergy," "food allergy" or "bacterial allergy." To other authors, however, the term "erythema multiforme" is all-inclusive.

Treatment can be either systemic or topical. Systemic treatment consists in administration of comparatively high doses of antihistamines (up to 400 mg. daily in divided doses); steroids, such as prednisolone (from 60 to 80 mg. daily in divided doses for from two to four days) may be given. Thereafter the dose should be reduced by from 5 to 10 mg. a day.

Topical treatment depends on the characteristics of the eruption. Open wet dressings of Burow's solution, 1:20 dilution, one to two hours daily are applied to denuded areas, and the use

of colloid baths (once daily) may be helpful.

Dental and medical practitioners should be aware that erythema multiforme is a severe, prognostically unfavorable disease of as yet undetermined etiology. It may attack all parts of the human body and it is marked by a variable course simulating various diseases.

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Atypical tooth erosion in a Pygmy skull

H. L. Tollens. *Tschr. tandheelk.* 67:193-199
March 1960

The skull of a Pygmy woman of Central Africa was studied at the department of operative dentistry of the University of Groningen, The Netherlands.

Microscopic examinations of tooth specimens revealed the presence of a unique erosion of the tooth surfaces. The loss of substance on the surfaces of the teeth free from normal attrition and caries probably was caused by the habitual intake of beverages or foodstuffs rich in acid contents. The effects of the acid (or acids) produced a crestlike alteration of the enamel lamellae. In a localized region of the occlusal surface of one tooth the bands of Schreger became clearly visible in relief. In another tooth, a portion of the thin cementum layer, covering the neck of the tooth, had eroded, thereby exposing numerous minute transverse ridges (perikymata) on the dentin surface, a phenomenon which corresponds with the fine, threadlike lines of the homogeneous cementum surface (Ebner's fibrils).

Occasional tooth attrition must not be confused with tooth erosion. Erosion is the loss of tooth structure occasionally occurring on the labial or lingual side of the gingival third of a tooth.

In the teeth of the Pygmy woman, the defects in enamel, dentin and cementum were the result of a gradual wasting away of the hard tooth substances without demonstrable cause. In this Pygmy skull, the basic difference between attrition and erosion could be easily recognized: attrition occurs only where the opposing teeth come in contact, whereas erosion occurs on tooth surfaces which obviously are not subjected to occlusal wear.

Although the etiology of tooth erosion still is obscure, in the teeth examined a definite acid reaction could be demonstrated by testing with blue and red litmus paper which is extremely sensitive in the pH range from 6.8 to 7.3. It can be assumed that after the teeth of this Pygmy woman were attacked by acids, the calcium carbonate was dissolved and the tricalcium phosphate changed to dicalcium phosphate, rendering the chemically altered enamel less resistant to erosion. The wedge-shaped eroded lesions probably had penetrated to the level of the pulp chamber, however, without exposing the pulp.

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Respiratory obstruction in haemophilic patients

R. A. L. Leatherdale. *Brit.M.J.*
No. 5182:1316-1320 April 30, 1960

The dangers to hemophiliacs of bleeding from external wounds, or of bleeding into the muscles, joints, urinary tract and gastrointestinal tract, are well-known. A less common condition, but of far greater immediate danger to the patient, is the extravasation of blood into the tongue, the tissues of the floor of the mouth, and the fascial planes which surround the pharynx, larynx and trachea. Hemorrhage here can produce gross swelling with consequent encroachment on the space within the mouth; where very gross distortion of the tissues occurs, there is grave risk of death from asphyxia.

To the 21 case reports of patients with this syndrome described in the literature, ten new case histories are added. In only one of the ten patients did respiratory embarrassment lead to the patient's death.

Only the slightest stimulus is necessary to start the bleeding; indeed, in many instances no precipitating factor can be elicited. In the 12 instances involving the 10 patients, trauma was a factor in one, sore throat in four, in two the cause was related to the dental condition, and in five no cause could be determined.

On the day before admission, a six year old boy (a known hemophiliac) complained of a sore throat, and a few hours later began to bleed from the loose lower right bicuspid. During the night,

swelling of the floor of the mouth and tongue occurred, and early next morning he was sent to the hospital. When examined, he could not talk or swallow. The loose tooth was extracted without anesthesia to allow blood to escape, and the patient was transfused with two pints of fresh blood. His airway was becoming obstructed and a nasopharyngeal tube was passed; this brought immediate relief. Two pints of fresh frozen plasma was given and the swelling began to subside. A further four pints of plasma was given over the next three days, by which time the patient could talk and swallow normally, and his convalescence was uninterrupted.

A 19 year old boy, five days before admission, complained of soreness of the gingiva of the lower jaw, and of slight bleeding from the gingival margin. Swelling of the submental region began three days before admission. By the time the patient arrived at the hospital, the swelling was pronounced and associated with displacement of the tongue. The gingiva of the lower jaw was swollen and discolored. Some of the mandibular molars were grossly carious. Respiratory obstruction occurred, and was relieved by passage of a nasopharyngeal tube. The administration of fresh blood corrected the clotting defect.

Two points must be emphasized relating to dental treatment in hemophiliacs. It is dangerous to employ local analgesics, particularly in the mandible. Hemorrhage resulting from inferior dental nerve block or infiltration of the gingiva of the lower jaw can track easily into the tissues of the floor of the mouth. The second point is the danger inherent in suturing a bleeding tooth socket in a hemophiliac. Such a procedure deprives the blood of its only possible means of escape from the tissues and thus creates ideal conditions for this syndrome to become aggravated.

In the United Oxford Hospitals all dental extractions in patients with hemorrhagic diatheses are carried out under general anesthesia.

The patient should be admitted to the hospital at the earliest moment, irrespective of the apparent triviality of the condition when first seen. There is no time or place for expectant treatment in the patient's home. The hazard of death from asphyxia is ever-present.

Bournemouth and East Dorset Group of Hospitals, Bournemouth, Hampshire, England

Physiology

BoneJ. R. Trott. *J. Canad. D. A.* 26:347-353 June 1960

The practice of dentistry is more intimately related to bone tissue than is the practice of most other branches of the medical sciences. When the principles of bone tissue, bone biology and bone behavior are kept in mind, the understanding of repair after extraction, healing of a dry socket, orthodontic treatment and treatment of chronic periodontal disease becomes clearer.

Bone is a calcified connective tissue which gives the vertebrate animals their rigidity and also aids their means of locomotion. Because bone is a hard, dense connective tissue and is able to withstand considerable trauma, sensory and special organs (such as the brain and the spinal cord) are either encased in bone or protected in some way by bony boundaries (as are the eye and the inner ear). Teeth are special organs which, for function, need to be encased in a rigid support such as bone.

Bone is composed of cells, intercellular fibers and an amorphous ground substance. The fibers and the ground substance form the organic bone matrix which differs from other types of connective tissue by the addition of certain inorganic salts. These either permeate, or are deposited in, the bone matrix. The organic connective tissue thus becomes modified into hard or calcified bone. Once the cells of bone tissue, the osteocytes, become trapped in the hard, unyielding calcified matrix, their reaction to external influences is less volatile than are those of ordinary connective cells.

On the basis of the relationship of the osteocytes to one another, and the structural pattern of the intercellular fibers, bone tissues can be classified as woven bone, lamellar bone or bundle bone. In both health and disease, when bone is formed, these classifications are the only variations that are possible.

Woven bone—the bone found in the fetus and during the first years of life, in certain pathologic conditions, in the callus of a fracture and in a healing tooth socket—occurs wherever bone tissue is being laid down rapidly. In woven bone (Fig. 1), the osteocytes are not distributed regularly but occur at random. The bundles of collagenous fibers may be either coarse or fine and weave their way around the osteocytes in all directions. The osteocytes vary greatly in size and shape. The matrix stains unevenly and often is more basophilic than is lamellar bone. Woven bone eventually becomes resorbed and replaced by lamellar bone.

Lamellar bone, as the name implies, appears as if one layer has been added on to the next, as in plywood. This is the most perfect and beautifully designed tissue. Lamellar bone (Fig. 2) is the bone of the adult skeleton. The osteocytes are oval-shaped cells lying in lacunas within the calcified matrix. They occur at regular intervals not only from each other in the same lamella but also from those in neighboring lamellas. Each lamella is separated by a collagen-free zone which is called an incremental line.

In the maxilla and mandible lamellar bone is found irrespective of whether compact or cancellous bone is being examined. Compact and cancellous are anatomic terms used to describe the gross appearance of bones.

Bundle bone (Fig. 3) is a term used by Weinmann and Sicher (1956) to describe the bone lining the tooth socket into which the periodontal membrane fibers are inserted. The bone has apparent lamellation as evidenced by incremental lines, but the collagenous fibers of bone all run in the same direction, unlike lamellar bone where the direction is changing in each lamella. In bundle bone, the collagenous fibers also run at right-angle to the attachment of the periodontal membrane fibers. The part of the periodontal membrane fibers which enters the bone and is attached in some way is known as Sharpey's fibers.

In bone, as in other tissue, mature cells age and are replaced continuously by new cells. Bone formation occurs by a similar process, whether it is laid down as spicules in the mesenchyme, around a cartilagenous model, or as appositional growth in the adult.

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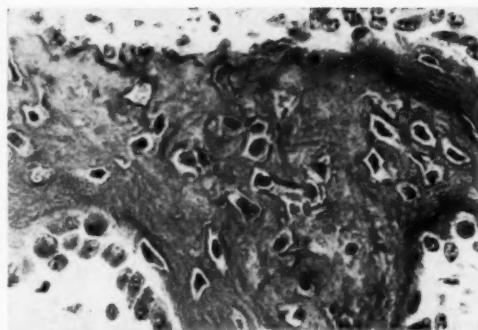


Figure 1 (Above) A decalcified section of woven bone. Note the irregularity of the positions of the osteocytes. The coarse collagenous fibers do not show with the stain used

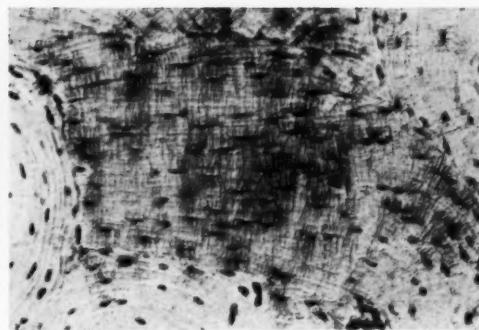


Figure 2 (Above, right) An undecalcified section of lamellar bone. Note the regularity of the layers and the spacing of the lacunae from which the osteocytes have been lost

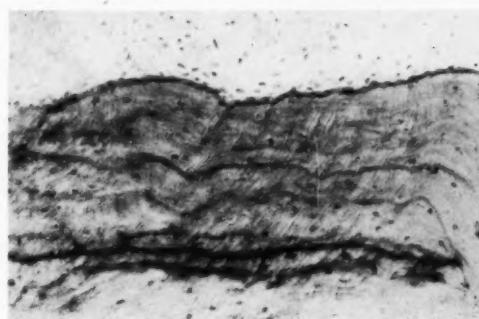


Figure 3 (Right) A decalcified section showing bundle bone adjacent to the periodontal membrane

Bone growth is one of apposition, a continual laying down of more organic matrix which subsequently is calcified to become true bone. However, for bones to grow to their adult size, it is not enough to add layer on layer; removal of some of the bony tissue also has to occur for remodeling

to take place. Bone resorption must also occur if bones are to grow. In health, a balance is struck between the bone formation and the bone removal.

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Influence of occlusive movement on amount of parotid saliva

Rokuro Suhara, Kiyoshi Ono, Tomio Takikawa and Masao Tanaka. *J.Nihon Univ.School Den.* 2:75-79 Dec. 1959 [in English]

The influence of the occlusive movement on the secretion of parotid saliva was studied in subjects ranging in age from 16 to 45 years. Parotid secretion was captured with the salivary suction cup (Hayashi and Suhara, 1950, 1958).

In each subject, the amount of resting saliva was measured. The amount of saliva secreted during empty occlusive movements then was ascertained. Finally, each subject chewed on paraffin

wax, on commercial chewing gum and on unflavored chewing gum for nine minutes each, the secretion of saliva being measured after each experiment. The following findings were obtained:

1. Empty occlusive movements resulted either in no increase or in a decrease in salivary secretion. When the empty occlusive movement is repeated for some time, it seems to inhibit normal salivary secretion.

2. Although paraffin wax has a rather unpleasant taste, evidently it stimulates the secretion of reflex saliva. The flow of saliva increased about 7.5 times when the subject chewed on paraffin wax, as compared to the normal resting flow of saliva.

3. When subjects chewed on commercial chewing gum, the flow of saliva was increased 45.2 times on the average over the normal resting flow of saliva.

4. When subjects chewed on unflavored chewing gum, the flow of saliva was increased from 2.0 to 18.3 times over the normal resting flow. The average increase was 6.9 times over the normal resting flow.

The insertion of various substances in the oral cavity and the resulting occlusive movements lead to an increase in salivary secretion. Empty occlusive movements, however, are not accompanied by an increase in salivary secretion.

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The salivary glands— some contemporary problems

A. S. V. Burgen. *J. Canad. D. A.* 26:258-259
May 1960

The salivary glands and their secretions have fascinated morphologists and physiologists for centuries. It seems obvious that these glands exist mainly to provide a moistening and lubricating fluid to aid in mastication and deglutition; yet, anything beyond a superficial glance reveals a mechanism of unexpected complexity. All available evidence shows in the salivary glands an elaboration of physiologic processes comparable to that in the kidneys.

In some species—in the rat and dog, for instance—the structure of the salivary glands is immature at birth; few or no acini are present; yet these very young animals are able to secrete saliva at almost the same rate as adult animals, although the salivas differ in composition. For instance, the saliva produced by immature glands contains a higher concentration of sodium and chloride but is almost free of bicarbonate. The potassium concentration is unchanged throughout development. In human infants at birth, the salivary glands apparently are histologically mature although evidence of a physiologic immaturity exists, causing an abnormally high sodium concentration in the saliva and a reduced amylolytic activity.

Since Heidenhain, it has been commonly accepted that the sympathetic and parasympathetic

nerves innervate different structures in the salivary glands. Recently, several lines of evidence seem to make this view untenable. Lundberg (1955) has produced evidence of a double innervation of all the cells of the salivary glands down to the cellular level. However, it should not be assumed, because all the cells apparently are innervated by both systems, that the secretory effects are identical. There is abundant evidence that the composition of chorda and sympathetic salivas differ in important respects. Lundberg's studies revealed a new physiologic phenomenon. The acinar cells are totally inexcitable by electric currents but in response to nerve stimulation develop a most striking hyperpolarization, unlike the hyperpolarization found in cells of the nervous system or the heart during inhibition, and almost certainly produced by active transport of anions.

It is now established that the concentrations of the individual electrolytes in the saliva seem to vary in their own characteristic fashion in response to changes in the rate of saliva secretion. Distinctive patterns have been established for sodium, potassium, chloride, bicarbonate, lithium, phosphate and iodine.

Little is known of the secretory processes in any gland. Only in the last few years has the application of modern ideas in cellular physiology led to some progress. For instance, it has been shown that when a salivary gland is equilibrated with radioactive urea and then perfused with nonradioactive urea, the urea secreted in the saliva always is considerably less radioactive than the urea contained in the gland.

It has been shown that normally about two thirds of the salivary urea enters the saliva through the ducts and only about one third through the acini. Secretion of iodide probably occurs exclusively through the ducts.

The more distally in the ducts the substance is permitted to cross, the earlier it will appear in the saliva. Many substances can cross the salivary ducts but they do not all cross in the same place. A distal part of the duct is permeable to anions but not to cations.

The salivary ducts seem to be very specialized and far more complex physiologically than had been imagined.

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Dynamic aspects of bone biology

Rodolfo Amprino. *CIBA Symp.* 7:163-170
Oct.-Dec. 1959

Since the discovery that radioactive substances introduced into the organism unite to a greater or lesser degree with the inorganic components of bone, biologists, dentists and physicians have again turned their attention to the biology and physiology of bone.

The danger of bone diseases from radioactive rays, such as bone tumors, hematopoietic disorders, localized necrosis, and others, threatens mankind and the animal kingdom more and more each day.

As a result, studies of the mechanism by which radioactive substances are deposited and possibly remobilized, have been intensified recently. These have led to new findings in regard to osseous tissue which—in view of its physical properties, compactness, relative inelasticity, inorganic structure and low cell content—had previously been investigated less thoroughly than other tissues containing a higher proportion of organic structure.

The biology of osseous tissue is inseparably connected with that of the other tissues of the body such as periosteum, endosteum, vascular connective tissue and bone marrow. Some of these tissues, however, display considerably greater sensitivity to physiologic and pathologic stimuli than bone, and they are capable of provoking metabolic or structural changes within the skeleton. Many bone disorders, therefore, are caused by the activity of the periosteal fibroblasts which, although they have a low degree of differentiation, constitute potential elements of the reticuloendothelial system with a hematopoietic function, and of osteoblasts, osteoclasts and fibrocytes.

The microscopic processes of growth and regeneration of osseous tissue are typified by alternating phases of absorption and regeneration.

The product of regeneration may exist in the tissue of either a pre-existing or a transformed structure. Absorption is effected by the osteoclastic giant cells which break down the organic matrix of osseous tissue by an enzymatic action, thereby releasing the calcium salts. Osteoclasts exist only during the actual period of bone destruction. Their appearance and subsequent disappearance are regulated by the parathyroid gland. Hyperparathyroidism is accompanied by increased bone absorption which may lead to osteoporosis.

In the second phase of bone formation, the osteoblasts become active. These derive from cells of connective tissue in the inner layers of the periosteum or the various bone cavities and canals. The osteoblasts form the organic ground substance of osseous tissue, which contains a sulfur compound (chondroitin-sulfuric acid). The newly formed organic ground substance does not remain calcium-free for long, but soon undergoes calcification through fixation of calcium salts in the form of apatite crystals, initially minute in size but gradually increasing.

The microscopic processes of neoformation play an essential part in changes in shape and size of bones during the growth period and also in structural modifications. They help the skeletal system to adapt itself to varying qualitative and quantitative loads and stresses. Callus formation after bone fractures is another aspect of the same principle.

There are differences within each bone, and these differences are both typical and constant for any bone segment. The variations in the degree of calcification between areas of osseous tissue of different ages enable the determination of the sequences of their development.

Various pathologic bone conditions, especially in the maxillofacial region, are typified by quantitative changes in the physiologic proportions between absorption and regeneration. It is obvious that such quantitative changes may also produce structural changes of a qualitative nature. In other instances, deviation from the structural pattern may derive from deeper lying changes in bone formation and not only from changes in regeneration.

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**Nuclear changes in squamous cells
from buccal mucosa in pernicious anaemia**

P. C. Farrant. *Brit.M.J.* No. 5187:1694-1697
June 4, 1960

In a previous communication (1958), the author presented evidence which confirmed the existence of abnormally large nuclei in oral squamous mucosa in pernicious anemia. The present paper gives the results obtained by examining 25 patients with pernicious anemia before and after treatment.

Films of oral mucosa were obtained by scraping the inside of the right cheek with an ordinary microscopic slide. The resulting material was spread on another slide, dried in air, fixed, and stained by a standard technic. An image of the buccal squamous cells and their nuclei was projected by means of a microscope and a powerful source of light onto a ground glass screen arranged to give a magnification of 1,000. One hundred nuclei in each preparation were examined and measurements of the long and short axes were made. The 25 patients were examined before and after treatment, and repeat films of oral mucosa were taken at intervals varying from 2 to 32 months after successful treatment.

There occurred a highly significant decrease in nuclear size after treatment, the decrease being greater in the short axis. A population of larger nuclei among the untreated patients was noted. Not only do the nuclei become smaller and more uniform in shape when specific treatment (with vitamin B₁₂ or liver) is given to a patient with pernicious anemia, but in many instances the nuclear chromatin becomes more pyknotic and dense.

In pernicious anemia the squamous cell nuclei are abnormally large and may have an irregular asymmetric outline. Of 39 patients with pernicious anemia, previously examined, abnormal nuclei in the buccal mucosa were found in 28, the incidence varying from 1 to 15 per 100 nuclei examined. The over-all incidence in all patients was 3 per 100 nuclei. There was no correlation between mean nuclear size and the number of such abnormal nuclei observed. In contrast to these findings in 39 patients with untreated pernicious anemia, in 25 patients examined after treatment and in 62 normal patients, only two

abnormal nuclei were seen, one being found in each of the two groups of patients.

Once treatment in pernicious anemia is started, the nuclei change to normal size and shape within a few days. Not infrequently, a longer time may be needed for a smooth tongue to become a normal tongue.

There is much evidence for a disorder of nucleic acid metabolism in pernicious anemia.

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**Examination of an isolated tooth
may provide clues for age determination**

John Nalbandian and Reidar F. Sognnaes.
Sci.Digest 47:72 April 1960

Using specially constructed instruments, dental researchers at the Harvard School of Dental Medicine in Boston, Mass., have been able to observe the nature of changes in tooth structures which provide significant clues for the determination of a person's age.

Some of these structural changes are macroscopically observable, such as those caused by attrition. The measurement of the microscopic changes occurring within the roots of a tooth, however, appear to reveal the most genuine biologic changes associated with the aging process.

The study was designed to determine the cause of changes in transparency occurring in the dentin of the roots. These changes can be described as a form of sclerosis, that is, the deposition of minerals within the minute dentin tubules. The dentin of the roots is structurally and chemically identical in all tooth types in a person's mouth, and it is less affected by disease than the dentin of the crowns.

Extremely thin sections of dentin of the roots, when cut with a rotary microtome without removing the inorganic salts and examined under an electron microscope, show the distribution and degree of the mineral deposits in the dentin tubules.

Studies of these specimens, when combined with other observations, make it possible to estimate the age in about 66 per cent of instances (within an accuracy range of 7.9 years) even if only a single tooth is available for investigation.

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Host influences in the initiation of malignancy

W. Cutting and M. Cutting. *Med. Exper., Basel* 1:69-72 July-Dec. 1959 [in English]

Previous experiments have demonstrated the possibility of implanting carcinogenic and non-carcinogenic cells into the bodies of experimental animals in membranous capsules which permit not only the survival of the implanted cells but protection of these cells from immunologic influences exerted by the host tissues.

Occasionally, the host cells could penetrate the membranous capsules of a pore size as low as 0.45 micron, whereas membranous capsules with a pore size varying between 0.8 and 1.2 microns were passed easily and regularly. Although the pore size of 0.45 micron is usually regarded as an adequate immunologic protection, the observed entry of host cells through the larger pores of the mucous membrane required further investigation of the problem of host influences in the initiation of malignancy.

Capsules with semipermeable membranes were constructed of sections of cylindric Tygon tubes and millipore membranes. These empty capsules were implanted intraperitoneally into white Webster mice under sodium pentobarbital anesthesia. At various intervals the capsules were removed for histologic studies; smears of adjacent tissues or the contents were examined after Giemsa staining. Altogether, 21 empty capsules with 1.2 micron membranes, and 18 with 0.8 micron membranes were implanted. During the following ten months, they were removed for secondary implantation or examination.

The following conclusions were made:

1. The capsules were found to be consistently free from surrounding membranes or adhesions. Stained smears, taken from the inner surfaces, showed monocytic cells which occasionally seemed to be formed into uniform layers. The

majority of the cells were of two types, those extremely small with bluish nuclei and cytoplasms, and those slightly larger with red nuclei and hardly visible cytoplasms. The cells were monocytes or macrophages, and occasionally there were serosal cells. No cells in mitosis or of an extraordinarily large size were observed; none appeared to be neoplastic.

2. Capsules removed at 5 and 7 months after implantation were reinserted into another series of white Webster mice. After from 3 to 5 months, no gross or microscopic evidence of malignancy was found.

These results proved that host cells could enter the inserted capsules through membranes of either 0.8 or 1.2 micron pore size but that neither the implanted nor the penetrating cells became malignant within periods up to ten months. These results do not support the hypothesis that neoplastic changes are produced by influences exerted by adjacent (host) cells. Although the implanted cells were never entirely separated from the host cells, they were certainly under less than normal influence, yet underwent no malignant changes.

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Roentgenotherapy, cytostatic agents or combined treatment of Hodgkin's disease

German M. Monthly 4:392 Nov. 1959

Q.—What are the chances of combined treatment (roentgenotherapy and cytostatic agents) in a patient with Hodgkin's disease of relatively recent origin? There is constant pain in the left side of the lower jaw and paresthesia of the chin. An increase in alpha and gamma globulins has been established.

A.—Although various cytostatic agents are now employed, roentgenotherapy remains the most important method of treatment of Hodgkin's disease, especially if the maxillofacial region is involved. It is particularly important that roentgen rays should be used in the early stages of the disease. Chemotherapy alone should not be used in the earlier stages. The involved glands should be treated by irradiation. Whether

chemotherapy should be applied after successful roentgenotherapy depends on the general clinical findings and the results of the blood count. As a rule, however, the prognosis is unfavorable because of the rapid growth of granulomas associated with the disease.

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The cytological diagnosis of oral cancer

R. A. Cawson. *Brit.D.J.* 108:294-298

April 19, 1960

To investigate the suggestion that exfoliative cytology may permit an earlier diagnosis of oral cancer, an examination was made of 40 patients with either proved oral cancer or oral lesions suspected of being malignant.

The surface of the lesion was firmly scraped with the bent end of a sterile, nickel, chemist's spatula of the Chattaway pattern. The suspension of cells picked up on the tip of the spatula was immediately transferred to a clean, dry glass slide, spread as rapidly and evenly as possible over an area about 4 by 2 cm., and fixed, while still wet, in Schaudinn's solution. The smears remained in the fixative for about 20 minutes, after which the excess mercury salts were washed out in spirit containing a trace of iodine. The smears were stained in Mayer's hemalum and eosin, which brings out the nuclear detail particularly well and enables a close comparison to be made between the appearance of the cells in the smears and the sections of the biopsies. The technic is a simple one.

The commonest change seen in the malignant cells was an enlarged, hyperchromatic nucleus with a reduced amount of cytoplasm, which often was vague in outline and tenuous in character. These nuclei and cells were irregular in size and form. The increased amount of chromatin usually was distributed in a coarsely granular manner, and the nuclear membrane was dense and prominent. In other smears the excess chromatin was more evenly distributed through the nucleus which therefore appeared uniformly densely stained. Several nuclei usually were present and some of these were large.

In 31 cases of carcinoma of the oral mucous membrane, cytological examination permitted the

correct diagnosis in 25 (81 per cent). This percentage is similar to those obtained in previous investigations, and is about the same as is obtained by biopsy.

In four patients with deeply situated neoplasms, such as a carcinoma of the maxillary antrum, causing an oral swelling with an apparently intact covering of mucous membrane, no malignant cells were found in the smears.

Four patients had lesions thought to be malignant either because of chronic ulceration or induration. These were shown by biopsy to be benign, and the smears also were negative.

Of the 31 proved carcinomas, 4 were early lesions; no malignant cells were seen in smears from 3 of these, and in the fourth the smear was only suggestive of malignancy.

Cytological examination of oral lesions is a desirable supplement to biopsy and should be carried out in all instances to reduce the number of false negative results obtained by biopsy alone. Exfoliative cytology is of the greatest value in those instances where biopsy cannot be carried out, where bleeding is a serious risk, and after roentgenotherapy where biopsy can cause severe infection and delayed healing.

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Frequency of malignant tumors in diabetic patients

H. Rockstroh and H. Schröter.

München.med.Wschr. 102:897-901

April 29, 1960

To determine the incidence of malignant tumors in diabetic and nondiabetic patients, an investigation was carried out at the surgical clinic of the Medical School of the University of Halle/Saale, Germany. The result proved that cancer, especially oral cancer, occurred more often in nondiabetic than in diabetic patients treated for malignant tumors at the clinic. This seems to confirm the anatomicopathological statistics previously published by German pathologists who had evaluated 22,971 autopsy reports.

In 4,142 of these autopsy reports (18 per cent), the presence of malignant tumor (although not always the cause of death) had been diag-

nosed. Almost one fourth of these tumors had occurred in the oral cavity itself or in other parts of the maxillofacial region.

In 2,372 of the autopsy reports (8.8 per cent), malignant tumors had occurred in patients with diabetes mellitus; however, there were hardly any tumors involving the mouth or the neighboring regions.

Comparison of the data accumulated at the clinic with those reported in the anatomicopathological studies seemed to prove that a significantly negative syntropy exists between cancer and diabetes.

The peak of cancer incidence in diabetic patients occurred in the seventh decade of life, whereas the peak in nondiabetic patients occurred in the fifth decade.

It can be assumed that the principal attack of diabetes mellitus on the entire digestive system produces an inverse relationship between this disease and malignancy. In the great variety of metabolic disorders and of cancer, the common denominator seems to lie in the failure of decomposition of carbohydrates and utilization of waste products. This common denominator may give the clue for an explanation of the lower cancer frequency in diabetic patients.

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Some skin manifestations in cancer

Cancer Bul. 12:54-56 May-June 1960

Some dermatologic conditions are associated closely with the development of cancer. In some instances, the causes of the skin manifestations are obscure, and the relationship is hard to demonstrate. Indeed, almost all of these skin conditions can result from causes other than cancer. Nevertheless, any external manifestation which may be related to internal cancer is noteworthy, particularly if the condition indicates the need for close observation or can be initial evidence of malignancy.

Some types of pigmentation are associated with a particular kind of tumor formation. One of the best-known is the café-au-lait coloration found in patients with neurofibromatosis. As the name im-

plies, the pigmented areas are the shade of coffee diluted with milk. The spots usually are distributed asymmetrically on the arms, legs and face, and occasionally on the palms and soles.

Melanin mucocutaneous spots may be associated with gastrointestinal polyposis, particularly that of the small intestine. The spots are brown to black, punctate, and are most frequently observed on the lips and buccal mucosa. Bartholomew and Dahlin (1958), in a review of the case histories of 117 patients with polyposis, found the typical spots on the lips of 115 patients and on the buccal mucosa in 103. In this series, 108 patients had polyps in the small intestine, one had polyps in the stomach and colon, seven had rectal polyps and one patient had rectal, colonic and gastric polyps.

Acanthosis nigricans, when it occurs in adults, almost invariably is associated with visceral carcinoma. The darkish pigmentation is characterized by multiple minute papules which develop in folds of the skin such as the axillas, the genitalia, the perianal region, and sometimes in the mucous membranes. The papillomatous areas, particularly those in the large folds, gradually become furrowed and the color darkens. In some instances, the skin condition disappears after removal of the tumor, and is observed again after recurrence of the tumor.

Intermittent flushing which lasts for from 10 to 30 minutes is an important manifestation of the so-called functioning carcinoid syndrome. The flushing usually affects the face and neck but also may spread to other body surfaces. The erythema is bluish-red and may be patchy or diffuse. Occasionally, cyanotic spots are noticed.

Concomitant dermatomyositis and cancer have been reported in an increased number of patients. Williams (1959) found 590 patients with dermatomyositis, and of these 92 had cancer.

Cutaneous abnormalities of many kinds occur in patients with lymphoblastoma, and may appear in any stage of the disease. A severe pruritus occurs with considerable frequency in patients with Hodgkin's disease.

It is difficult to ascertain the value of these signs as early indications of cancer.

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Bacteriology

Effects of prolonged Antarctic isolation on oral and intestinal bacteria

Robert J. Adams and William R. Stanmeyer.
Oral Surg., Oral Med. & Oral Path. 13:117-120
 Jan. 1960

To determine the effect of prolonged cold on bacteria within the human host, a program was outlined in which changes in quantities of *Lactobacillus acidophilus*, both oral and intestinal strains, were to be studied on a monthly basis throughout the Antarctic year. Subjects were 37 men with a mean age of 27.4 years who, at the beginning of the study, were stationed at Davisville, R. I.

The pre-Antarctic oral *L.acidophilus* count taken in November 1956 at Davisville showed a mean of 16,121 per cubic centimeter per man. On arrival in the Antarctic in February 1957, the group was resurveyed and showed a count of 18,337. Two months after isolation, the mean group count fell to 5,189. The bacterial count remained depressed at 6,555 until June, when the mean soared to 26,550, and continued to remain high for the remaining five months of the experiment, with means of 20,720, 22,646, 23,103, 17,075 and 15,907 for the months of July through November.

The mean counts of intestinal *L.acidophilus* were as follows: May, 6,900; June, 24,091; July, 7,400; August, 24,500, and September, 24,490.

During the daylight months of February through May, the mean daily temperature ranged from -14.7°F. to -23.4°F., and the relative humidity seldom rose above 5 per cent. The combination of the two factors caused mouth breathing and a decrease of intraoral temperatures measured on the surfaces of teeth. During the months February through May the experimental group worked outside, with an 18 hour workday, seven days a week. It was during these months that the *L.acidophilus* counts fell to sig-

nificantly low levels. In June, the worsening weather and continuous darkness forced the men indoors, and they remained there, for the most part, throughout the Antarctic winter. On their return to the 68°F. humidified air of their shelters, intraoral temperatures rose and lactobacillus counts increased to, and in many instances surpassed, pre-Antarctic levels.

It is suggested that the quantities of lactobacillus counted in saliva correlate with environmental temperatures. Measurements made on lactobacillus found in stools showed no such correlation with environmental temperature over the period studied.

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Effect of combinations of antibiotics and essential oils on *Staphylococcus pyogenes* var. *aureus*

Jasper C. Maruzzella and Alex Bloch.
Naturwissenschaft. 46:515-516 Sept. 1, 1959

H. Stickl, in 1955, combined streptomycin and tetracycline (Achromycin) with the essential oils of camphor and mustard, and found that the addition of these oils potentiated the effect of both antibiotic agents on *Escherichia coli*. Similarly, T. Halbeisen, in 1956, reported that the antibacterial activity of chloramphenicol (Chloromycetin) was enhanced by the addition of mustard oil derivatives.

A series of antibiotic agents combined with essential oils was investigated at the biology department of the Long Island University, Brooklyn, N.Y. A new method, developed by E. Edlinger (1958), was used which permitted a rapid *in vitro* evaluation of the antibacterial effects resulting from the administration of such combinations.

Disks containing determined amounts of chlorotetracycline (Aureomycin), chloramphenicol

(Chloromycetin), dihydrostreptomycin, erythromycin (Erythrocin), penicillin, polymyxin B, oxytetracycline (Terramycin) and tetracycline combined with the essential oils of parsley, sage, juniper, pennyroyal, wintergreen, eucalyptus, tangerine, valerian, balsam tolu and birch tar, were tested for antibacterial activity against *Staph. pyogenes* var. *aureus* (ATCC 9996).

Of the 240 combinations tested, 123 (51 per cent) exhibited an activity which exceeded that produced by the action of either component alone.

Synergistic actions were produced by 58 (24 per cent) of these active combinations, and the remaining 65 (25 per cent) combinations showed results which ranged from a slight increase in activity to effects which represented a direct increase in action produced by the individual components.

No synergistic action was manifested by 66 (28 per cent) combinations, and minor antagonistic effects occurred after administration of 51 (21 per cent) combinations.

From the data obtained it appears that the efficacy of certain antibiotic agents could be enhanced by the addition of certain essential oils to the agents.

Further in vitro studies are now in progress to determine the effects of additional combinations of antibiotics and essential oils on a wide variety of microorganisms which were found to be resistant to antibiotic therapy.

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Fleming's lysozyme

Robert F. Acker and S. E. Hartsell. *Scient. Am.* 202:6:132-142 June 1960

Bacterial anatomists are indebted to the late Sir Alexander Fleming for a sensitive chemical tool with which they are able to study bacteria, dissolve the cell wall and expose the cell body, or cytoplasm, within. In 1922 Fleming, six years be-

fore his discovery of penicillin, found "a substance present in the tissues and secretions of the body, which is capable of rapidly dissolving certain bacteria." Because of the substance's resemblance to enzymes and its capacity to dissolve, or lyse, the cells, Fleming called it "lysozyme."

In the hands of Fleming and his successors, lysozyme has helped to develop new understanding of the cell wall in its relationship to the processes that go on in the cytoplasm it otherwise protects.

Fleming isolated both lysozyme and *Micrococcus lysodeikticus* that has been found to be the microorganism most susceptible to lysozyme, from the nasal secretion of a patient suffering from acute catarrh. Fleming observed that microorganisms exposed to lysozyme undergo a series of characteristic changes. First the cells begin to swell, both spherical and cylindrical cells becoming transformed into large spheres. These soon lyse and lose their visible outline. After a time the only visible remains are a scattering of dark granules.

Lysozyme has been found in saliva, tears, nasal mucus and the exudate from infections; in extracts from the spleen, kidney, liver, lungs and lymph; in especially high concentration in cartilage, but not at all in urine, cerebrospinal fluid or sweat; and in plants such as turnip, cabbage and cauliflower and in certain minute living organisms. Egg white is the best source of lysozyme.

Lysozyme is a protein with the relatively low molecular weight of 14,700, of the same order as that of ribonuclease (13,895) and insulin (6,000). Some 130 amino acid units, comprising 18 different amino acids, make up the structure of lysozyme.

The selective action of lysozyme fills a long-felt want of the microbiologist, permitting detailed study of the cell wall and a new approach to investigation of the cytoplasm. In recent years, lysozyme has been exploited as a research tool to open up vast new areas of bacteriology to investigation.

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Biochemistry

Strontium 90 in human teeth

F. J. Bryant, E. H. Henderson
and W. Holgate. *Brit.D.J.* 108:291-294
April 19, 1960

As the significant world-wide fall-out of strontium 90 has been experienced for the past seven years, only those teeth which were calcifying since 1953 can be expected to contain strontium 90. Therefore, only young teeth which have formed within this period are suitable for investigation.

In this study of strontium 90 in human teeth, only bicuspids from persons 9 to 15 years old and third molars from persons 17 to 23 years old, were analyzed to ascertain their strontium 90 content. The teeth had been extracted within the period from December 12, 1958, to April 23, 1959.

The method for determination of strontium 90 essentially was that described by Bryant, Morgan and Spicer (1959), slightly modified to deal with teeth.

In both bicuspids and third molars, the concentration of strontium 90 lay in the range 0.1 to 0.4 micro microcurie of strontium 90 per gram of calcium. A rough inverse correlation with age was noted, but the material is too limited for the correlation to be significant biologically.

The work is continuing, and it is hoped to extend it, particularly with regard to the more precise location of the strontium 90 within the teeth. This depends mainly on sufficient bulk of material becoming available.

As very much more fall-out of strontium 90 took place in 1958 than in previous years, it is to be expected that when teeth for analysis become available in which the enamel and dentin of the crowns were formed since the beginning of 1958, they may show a considerable increase in the amount of strontium 90 contained.

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On the effect of certain hormones associated with the genital system on the frequency of caries in the teeth of oophorectomized rats

Matti Grönroos and Erkki Rauma.
Suomen hammaslääk.toim. 56:1-6 March 1960

The incidence of caries in the teeth of oophorectomized rats maintained on a cariogenic diet was studied after the experimental rats had received certain hormones (estrogen, androgen or progesterone) for a period of six months.

The most conspicuous difference in the incidence of caries was noted between the control group and the group receiving estrogen; the incidence of caries increased significantly in the rats receiving estrogen.

Progesterone likewise appears to cause an increase in the incidence of caries, although not to a significant degree.

Oophorectomy alone also appears to cause a slight increase in the incidence of caries.

The administration of androgen to oophorectomized rats resulted in no change in the incidence of caries observed in comparison with the incidence in control rats.

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The incorporation and retention of Sr⁹⁰ in the teeth

W. Holgate. *Brit.D.J.* 107:131-143
Sept. 15, 1959

Weanling rabbits each received a single intravenous dose of Sr⁹⁰ ranging from 100 to 1,000 millicuries per kilogram of weight. Roentgenographic and histologic studies of the teeth and jaws led to the following observations:

1. Strontium⁹⁰ appears to be incorporated in the teeth in those regions which are undergoing active calcification at the time when the isotope is available to them.

2. In rabbits, an increase in the Sr⁹⁰ burden occurs for about 30 days after an intravenous injection. Thereafter, at dose levels of 100 microcuries per kilogram, the heavily contaminated layer of tooth which was being calcified at the time of the injections grows into occlusion and

wears away by attrition. This increase is in contradistinction to the level in the femur which falls steadily during the same period.

3. High doses of Sr⁹⁰ appear to interfere with the normal eruption of the teeth of rabbits. This stasis may have the effect of intensifying the irradiation of the surrounding tissues and may, in some measure, be a contributory cause of the formation of tumors in these regions.

4. The effects on the teeth and jaws appear to vary with the size of the dose and elapsed time of survival after administration.

5. The changes in the roentgenographic appearance of the jaw range from minor differences of density in the interdental septums to extreme opacity and the appearance of tumor formation. In the teeth, the changes vary from minor interference with the normal growth pattern and calcification to major alterations in the shape, density and size of the tooth.

The effects described in this paper may bear little relationship to the hazard engendered by the present level of Sr⁹⁰ fallout caused by nuclear explosions.

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Effect of Sr⁸⁹ on fluoride retention in the rat

Joseph C. Muhler, George K. Stookey and Martin J. Wagner. *Proc. Soc. Exper. Biol. & Med.* 102:644-647 Dec. 1959

The increasing use of fluoridated water along with the increasing amount of radioactive strontium in the atmosphere have caused speculation as to whether the mutual presence of fluorine and strontium increases retention of each within the body. The purpose of this study was to investigate retention in the rat of fluorine and radioactive strontium when both are fed simultaneously. A control group received no supplement of Sr⁸⁹. Three experiment groups received both fluorine (fluoride ion) and Sr⁸⁹ at three different levels.

The simultaneous administration of fluorine and radioactive strontium did not increase retention of either element in the whole carcass or

femur of the rat. Preliminary evidence suggests that the presence of fluorine may decrease the amount of Sr⁸⁹ retained by the rat.

Medical School, Indiana University, Indianapolis, Ind.

Effect of selenium on the incidence of dental caries in albino rats

Girolamo Pappalardo. *Minerva stomat.* 8:748-751 Nov. 1959

It is generally accepted that an increased consumption of refined carbohydrates (such as constitute the highly cariogenic Keyes' diet) results in a significant increase in the incidence of dental caries in experimental animals. Concepts that the trace element selenium may exert a caries-reducing effect have not been adequately explored.

Five groups of female albino rats (20 animals each) were fed the Keyes' diet for 100 days, and four groups of them were exposed to the influence of a selenium-sodium compound (Na₂SeO₃), intraperitoneally injected. The first group received a daily dose of 0.5 cc. (0.025 mg.) per kilogram of body weight; the second group 1 cc. (0.05 mg.); the third group 2 cc. (0.1 mg.); the fourth group 4 cc. (0.2 mg.), and the fifth group was used as control.

Although a statistically significant decrease in the incidence of caries (34.16 per cent and 36.66 per cent, respectively) was determined in the first and second groups, there was a tendency toward an increase in the incidence of caries in the third and fourth groups. The external appearance of most of the animals which had received higher doses of the selenium-sodium compound indicated that these doses were toxic.

The Keyes' diet, high in carbohydrate and low in fat, induced a rampant form of caries in the control group, whereas groups one and two were almost free from caries. It can be assumed, therefore, that an intraperitoneal injection of the selenium-sodium compound in minute doses produces a significant decrease in the caries incidence in albino rats.

Instituto di Clinica Odontoiatrica, Università di Catania, Sicily, Italy

Anthropology

E. Dubois and the Java man

Eugene W. Dunlop. *Sci. Digest* 47:85-89
April 1960

Marie Eugene François Thomas Dubois was born in 1858 at Eysden, The Netherlands. Although his name was French, he was thoroughly Dutch.

At the University of Amsterdam, where he studied medicine and natural sciences, he demonstrated his exceptional brilliance. When he became a lecturer on anatomy at the university, the controversy concerning the revolutionary theories of Charles Darwin on evolution had reached its peak. The ancestry of man was discussed and fought over, not only in universities but in church meetings, drawing rooms and village inns.

Those who took exception to the new ideas asked: "If man evolved from an earlier form of life, from an apelike creature, why are there no remains to prove it?" The only answer the geologists and paleontologists could give was that the record of man was incomplete.

Dubois had studied the fossil bones of Neanderthal man, and was impressed by the theory of the German biologist, Ernst Heinrich Haeckel (1834-1919), who assumed that man had descended from the apes, and that somewhere in the world must lie the remains to prove it. Some time in the past, creatures lived who stood between apes and men. Haeckel created the term *Pithecanthropus* (from the Greek *pitheko*, meaning ape, and *anthropus*, meaning man).

Dubois decided that he would prove that man evolved from other creatures and that ape man once existed on earth. The logical place to search for the bones of ape man seemed to be an area where apes were plentiful. This would be either Africa or the Dutch East Indies. Dubois joined the Dutch colonial army as a surgeon and sailed to Sumatra. In 1888, he explored a few caves in Java and found, close to the village of Trinil, an upper third molar, and later the top of a cra-

nium. These fossils belonged neither to any known species of ape nor to man.

Both fossil remains were as hard as stone and showed the same color as the volcanic earth in which they were found. Later, in the same ancient strata of volcanic earth in which the cranium and the molar were found, a fossilized femur with humanlike features was uncovered. This femur unquestionably belonged to a creature that walked erect. The average skull volume of the great apes is approximately 500 cc., that of recent man, 1,400 cc. The cranium fossil had a skull capacity of from 800 to 1,000 cc. Dubois named the ape man *Pithecanthropus erectus*, thereby retaining the term suggested by Haeckel, but adding the tremendously significant word *erectus* (erect).

Dubois exhibited the fossils in Paris, London, Berlin and other large European cities, and the battle about the evolution of man began again. Scientists accepted that *Pithecanthropus* was a specific early type of homo sapiens, whereas churchmen and laymen reminded the world that Adam, the only true ancestor of man, was certainly not an ape man.

In 1929, in a cave close to Peking, China, the skull of a creature was found which later was named Peking man or *Sinanthropus*. The fossil remains exhibited features of a slightly more advanced humanlike type than that of *Pithecanthropus*. Debris in the cave indicated that *Sinanthropus* knew how to use fire and crude tools. In 1937 and 1939, more fossil remains, among them several intact skulls, of *Pithecanthropus* were found in Java, showing characteristics which were definitely human. The dentition of the Java man combined features of ape and man. The roots of the molars were apelike but the crowns were almost identical with those in recent man. The bicuspids were not tusklike as in apes but in size and shape almost the same as in modern man.

As anthropologic evidence steadily accumulated, it was finally accepted that Dubois did discover the earliest known species of man (living in Java about 300,000 years ago), when he unearthed the first cranium and molar of *Pithecanthropus erectus*, thereby confirming the theory of the evolutionary nature of the development of man.

959 Eighth Avenue, New York 19, N.Y.

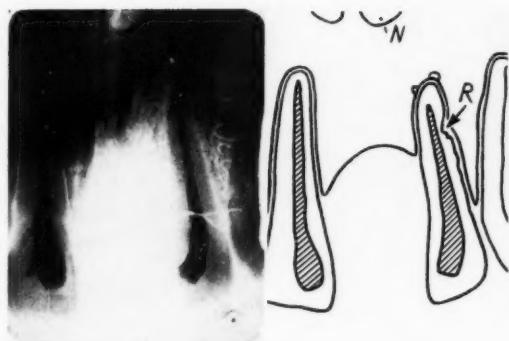


Figure 1 Roentgenogram and tracing made immediately after the root canal filling

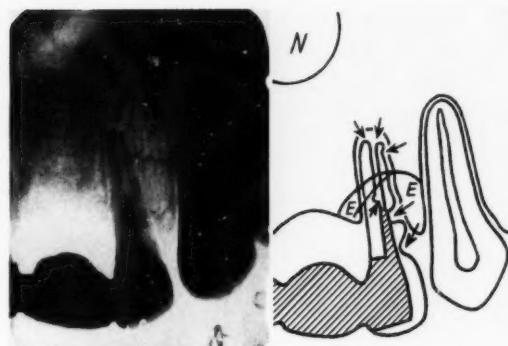


Figure 2 Roentgenogram and tracing made 14 months after the root canal filling

Case reports

Resorption processes within tooth structures: report of case

Hubert Drepper. *Deut.Zahnärztebl.* 14:73-80
Feb. 8, 1960

In 1931, G. Schweitzer reported his observations of specific "internal granulomas" appearing within the pulp or the pulp chamber. Previously, Mummery had described certain "pink spots" occurring in that region as "resorption processes within the pulp." Other authors, especially C. H. Fischer (1936) and E. Sauerwein (1952), maintained that granulomas of the pulp frequently simulate the symptoms of resorption processes

within tooth structures caused by proliferation of periodontal tissue. H. Euler (1957) suggested the use of the more neutral term "intradental resorption processes."

In an accident, a 17 year old boy sustained a deep fracture of the left upper central incisor, fragmentation of the root and extreme loosening of both adjacent teeth.

The central incisor was extracted, the root fragments were removed surgically, and root canal treatment of both adjacent teeth was performed. After treatment, both teeth were still slightly loose and showed a nonvital reaction to faradization. During the root canal treatment a persistent bleeding (especially from the canal of the left lateral incisor) was observed. Roentgenograms taken after root canal filling (with an iodoform paste) revealed that resorption processes had taken place involving mainly the outer root surfaces.

Figure 3 Resorption lacunae in which giant cells are evident

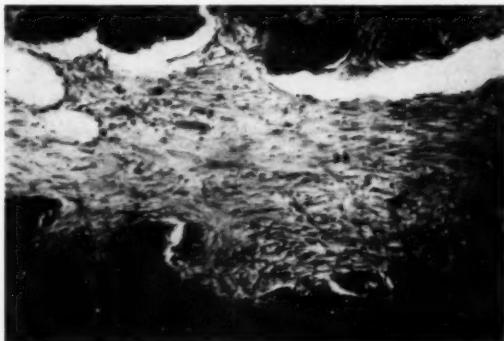
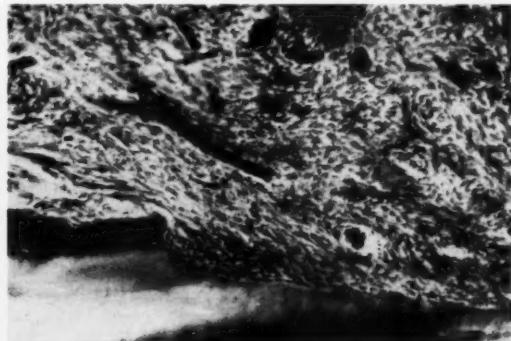


Figure 4 Completely absorbed tissue at the wall of the root canal



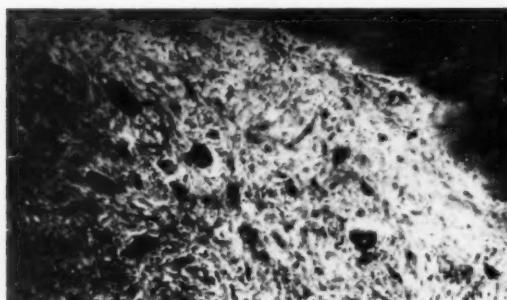


Figure 6 Cementum deposits at the dentinoenamel junction

Thirteen months later, the patient reappeared at the dental office complaining of dull aching in the anterior region of the upper jaw, and a painful reaction to changes in temperature. A fast growing tumor (at that time the size of a cherry) had appeared at the vestibular side of the root of the left lateral incisor which, after completion of the root canal filling, had been used as an abutment tooth for a bridge.

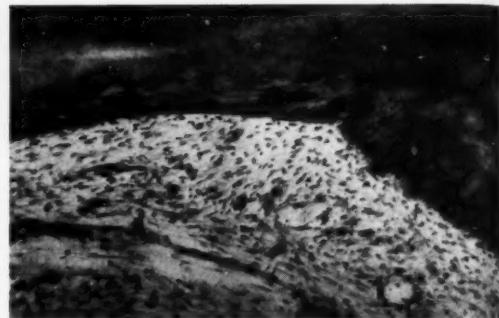
Röntgenographic examinations revealed the presence of an extensive resorption area and of metamorphosis of the root, both involving the pulp chamber. The root canal filling had disappeared completely.

The patient was immediately admitted to the Dental Hospital of the University of Münster, where the left upper lateral incisor was extracted and the tumor removed completely.

Histologic examinations showed that the tumor mass exhibited the typical features of a giant cell epulis which had extended into the resorption area. In the root canal, beneath the absorbed filling, there was a demarcation zone spotted with blood extravasations and covered by a dense layer of connective tissue which appeared to be rich in newly formed cells and vessels.

Microscopic examinations of specimens taken from the connective tissue showed the presence of certain foreign bodies, probably fragments of cementum or of partially resorbed dentin. The root canal walls appeared covered by giant cells. The resorption tissue within the tooth structures

Figure 5 Resorption of the dentin at the tooth surface



was histologically almost identical with the epulis tissue. Toward the apex, however, the connective tissue contained more fibers and less cells than the resorption tissue. Cavities within the dentin appeared to be filled with connective tissue and cementum. No odontoblasts were found.

Based on these findings it may be assumed that there was no pulp vitality at the time the deep resorption within the tooth structures took place. The similarity between "internal pulp granuloma" and "giant cell epulis" was obvious.

The syndrome described cannot be diagnosed by recognizing a few isolated symptoms but only by the appearance of a group of symptoms. The characteristic triad of the condition frequently can be visualized by typical historical data (trauma, endodontic treatment, oral surgery, and so forth) together with the clinical symptoms (negative pulp vitality tests, painless opening of the pulp chamber, sudden hemorrhage, and so forth), and roentgenographic findings (enlarged pulp cavity, resorption at the apex, edema of the apical foramen, periodontal involvement, fine wedge-shaped areas in the root canal walls, small interruptions in the outer contours, and so forth).

Histologic findings will reveal complete lack of odontoblasts, fibroblastic changes, lacunary resorption of dentin and its lining, giant cell formation and deposition of cementum particles within the involved tissues.

The diagnosis of internal pulp granuloma has to be confirmed by exclusion of intruding perio-

dental proliferation through study of a continuous series of specimens.

Before using a tooth given endodontic treatment as an abutment for a fixed bridge, roentgenograms should be taken to determine whether resorption processes within tooth structures have taken place or if internal injuries have occurred. However, if during root canal treatment a group of symptoms is noticed occurring simultaneously, accurate roentgenographic control is necessary and great caution in carrying out the endodontic treatment is advised before proper prognosis can be made.

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Saliva of increased viscosity

J.A.M.A. 172:992 Feb. 27, 1960

Q.—A 48 year old woman has complained for eight or nine months that her saliva is thicker and more sticky than usual and, at times, has a slightly whitish, discolored appearance. She is healthy, and there is no evidence of swelling, infection, or neoplasm in the salivary glands. The results of a basal metabolism test showed a rate of -12 to -15. Is this condition serious?

A.—This woman has xerostomia, which is the absence or diminution in quantity of salivary secretions, causing a saliva of sticky consistency and difficulty in mastication and swallowing.

Idiopathic xerostomia is a rare condition which is most commonly seen in elderly women. The onset is insidious, progressive, and, once established, permanent and irreversible. Treatment is limited to improvement in oral hygiene, the use of soothing mouthwashes, and improvement of nutritional status.

Acquired xerostomia usually is temporary, except when it occurs after radiation therapy. It may occur in patients improperly treated for dehydration, in patients with severe emotional disturbances, or in patients receiving certain drugs such as antispasmodics, antihistaminics and opium derivatives. Treatment is directed primarily at the underlying disease or condition,

with augmentation of the fluid intake induced by drinking unsweetened lemonade, chewing gum, or sucking juice from a lemon. Administration of nicotinic acid or pilocarpine hydrochloride may be of benefit.

A basal metabolism rate of -12 to -15 probably is of no pathological significance in this woman, since she is symptomless with regard to her thyroid status.

535 North Dearborn Street, Chicago 10, Ill.

A case of sialolithiasis

A. Richardson. Brit.D.J. 108:331-332

May 3, 1960

A 26 year old lieutenant in the Ghana army complained of pain in the left side of the mandible. He had noticed nothing amiss before the previous day. His pain was not related to mealtime. His temperature was normal.

Examination revealed a slight submandibular swelling on the left side, with moderate regional lymphadenopathy. The left side of the floor of the mouth was slightly elevated. The epithelium and orifice of the submandibular duct seemed normal. Bimanual palpation revealed a hard mass in the left side of the floor of the mouth. On massage, a small amount of viscous saliva appeared at the orifice of the left submandibular duct. Roentgenographic examination revealed the presence of calculus. The teeth were scaled and plans made to remove the calculus within the two ducts two days later.

On the following day the patient appeared, reported that he was well, and produced the detached calculus, which measured 22 by 9 mm. The concretion corresponded exactly with that depicted roentgenographically.

During the night, the patient said, he had awakened to feel half of the calculus free in the floor of the mouth, and had pulled out the entire concretion. The interesting features of this case are the symptom-free history and the fact that so large a concretion should be discharged spontaneously.

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The dental consultant

E. S. Priester. *Deut.Zahnärztbl.* 14:128-129
Feb. 22, 1960

The medical consultant has been firmly established as a specialist by custom and practice for many years. The dental consultant, whose sole or major activity consists in being called for advice or counsel in instances in which the oral cavity is affected or involved, is a comparatively new feature of the public health scene.

Constant inquiries received from dental practitioners the world over reveal that the scope, function and work of the dental consultant is not fully understood.

A detailed analysis of the dental consultant's activities demonstrated certain surprising features. During the period from 1953 to 1957, a dental consultant associated with the Regional Hospital Board of Birmingham, England, had been called to give professional advice or service regarding the entire field of dentistry in 10,850 instances. Of these, 6,754 involved new dental or medical patients. Surgical interventions performed by him or under his supervision during the period surveyed totaled 1,958.

The dental consultant provides professional advice and counsel with other specialists (dental and medical) so that treatment of the more complicated conditions involving directly and indirectly the oral cavity becomes available to a far greater number of people. He also acts as an adviser to refer patients of general practitioners to accredited specialists such as oral surgeons, orthodontists, pedodontists, periodontists, prosthodontists and medical specialists or hospitals.

The medical specialties such as dermatology, pediatrics, ophthalmology and otorhinolaryngol-

ogy especially will derive great benefits from having consultative dental opinion routinely available.

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Progress report—Riley Hospital Dental Clinic

John R. Mink. *Alum.Bul.Indiana Univ.School Den.* 7-9,39-40 March 1960

In the past five years, the Riley Hospital Dental Clinic in Indianapolis has steadily increased its facilities. An additional 720 square feet of floor space has been used to provide a new waiting room, business office, research area, and increased storage space and a darkroom. The clinic personnel has been increased, especially with the addition of more part-time help from practicing dentists.

A cephalometer has been acquired, for use in the study of facial changes in patients with cleft palate.

The teaching program has been enlarged, and five groups of students now are participating. Senior dental students are assigned to the clinic to familiarize themselves with the problems involved in dental care of handicapped patients; these students treat the patients. The pedodontic intern spends much time learning the techniques used in caring for handicapped and chronically ill children. Dental hygiene students participate in the preventive dentistry program. Dental assistant students assigned to the clinic learn special assisting techniques needed in the care of children. Medical and nursing students, interns and residents are instructed in the importance of good dental health care.

The number of patient visits increased from 1,100 in 1954 to 2,683 in 1959. Patients accepted for treatment receive care of the entire mouth, including roentgenographic examination, restorative, preventive and surgical procedures, space maintenance and interceptive orthodontic procedures. Patient and parent education is stressed.

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The influence of social and economic conditions on the prevalence of dental caries

J. N. Mansbridge. *Arch. Oral Biol.* 1:241-253
Jan. 1960

A study of the incidence of dental caries in children from contrasting social levels was made to ascertain whether differences exist between children of differing socioeconomic backgrounds. The data were obtained from part of a sample of 1,730 day-school children between the ages of 5 to 17 years. From this sample, 263 children who attended fee-charging schools as day pupils were matched, child for child in respect to age, sex and number of permanent teeth erupted, with an equal number of children attending non-fee-charging schools. The DMF index was used; in addition, an analysis was made of decayed and filled surfaces.

The incidence of caries of the deciduous teeth of children attending schools charging fees was significantly lower than that of children attending schools not charging fees, but the incidence of caries of the permanent teeth was significantly higher in those attending fee-charging schools.

When smooth and pitted surfaces were compared, the fee-paying children had a significantly lower proportion of smooth tooth surfaces attacked for all the teeth examined. However, for pitted surfaces the differences between the two groups of children were insignificant.

The findings, interpreted in the light of data from previous studies, suggest that in the deciduous teeth susceptibility to caries is influenced more by the quality of the tooth structure, but that in the permanent teeth factors originating in the oral environment exert the greater influence. The evidence supports the view that standards of child welfare constitute the major environmental differences between the two social classes.

Significant differences in caries experience exist between children from contrasting social levels.

The lower prevalence of caries of deciduous teeth in the fee-paying children is a reflection of their superior nutrition and health during the first year of life compared with those of non-fee-paying children. Standards of child care contribute to this result and suggest that maternal knowledge and efficiency may be more important than economic factors alone. On the other hand, the greater prevalence of caries of the permanent teeth in the fee-paying children appears to be related to diet consumed after eruption of teeth.

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Nutritional control of dental disease

Joseph F. Volker. *J. Pros. Den.* 10:341-349
March-April 1960

Not until the last decade have scientific knowledge and instrumentation developed to the extent that the chemicoparasitic theory of dental caries as propounded by Emile Magitot, W. D. Miller and G. V. Black could be tested adequately. Several recent investigations have provided conclusive support for the Magitot-Miller-Black hypothesis, with the following observations:

1. Dental caries does not occur in germ-free animals even when the animals are fed diets high in carbohydrates.
2. Dental caries does not occur in animals fed carbohydrate diets by stomach tube.
3. Carbohydrates are retained in the oral cavity for extended periods after food ingestion.
4. The microorganisms of the tooth surface metabolize retained carbohydrates with great rapidity.
5. The physical nature, not the quantity, of the carbohydrate is the major factor in determining oral retention.
6. The susceptibility of human beings to dental caries is influenced by the physical nature of dietary sugars.
7. The comparative retentive characteristics of foods containing carbohydrates have been established.
8. The cariogenicity of carbohydrates is modified by the presence in the diet of other foodstuff components.

9. If carbohydrate clearance is accelerated, dental caries is reduced.

10. If carbohydrate clearance is slow, dental caries is accelerated.

Experiments by the author and others indicate that it is not uncommon for certain carbohydrates to be retained on the occlusal surfaces of teeth for from six to eight hours, and on the proximal surfaces for from four to eight hours.

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**Caries incidence
in the kindergarten pupils
of Essen, Germany**

Hans Hülsmann. *Zahnärztl. Mitt.* 48:212-216
March 1, 1960

Periodic dental examinations of 4,920 pupils (from 3 to 5 years old) of the kindergartens of Essen, Germany, were carried out in the fall of 1957 and the spring of 1958, to evaluate the incidence of caries and to record the individual progress of the disease in individuals and in age groups.

After the initial dental examination during which the age, sex, calculus deposits, malocclusion, attrition, hypoplasia, and variations in diet and nutrition were recorded, the children were divided into the following five groups: Group 1, those free from carious lesions; Group 2, those with minor carious lesions; Group 3, those with cavities requiring endodontic treatment; Group 4, those with deep cavities, requiring isolated extractions, and Group 5, those with deep cavities, requiring immediate multiple extractions.

Among the three year old kindergarten pupils, 1,056 (70.5 per cent) could be classified in Group 1; 265 (17.7 per cent) in Group 2; 51 (3.5 per cent) in Group 3; 107 (7.1 per cent) in Group 4, and 18 (1.2 per cent) in Group 5.

Among the four year old children, 796 (49.4 per cent) could be classified in Group 1; 320 (20.2 per cent) in Group 2; 103 (6.4 per cent) in Group 3; 311 (19.2 per cent) in Group 4, and 78 (5.0 per cent) in Group 5.

Among the five year old children, 516 (28.4 per cent) could be classified in Group 1; 410 (22.6 per cent) in Group 2; 185 (10.2 per cent)

in Group 3; 502 (27.7 per cent) in Group 4, and 202 (11.1 per cent) in Group 5.

During 1958 and 1959, 5,468 pupils (from 3 to 5 years old) of the kindergartens of Essen were examined, and the same classification was used. Among the three year old children, only 48.5 per cent could be classified in Group 1 (a decrease of 22 per cent in dentitions free from carious lesions); among the four year old children, only 33.0 per cent had dentitions free from carious lesions (a decrease of 16.4 per cent), and among the five year old children, only 21.6 per cent had dentitions free from carious lesions (a decrease of 6.8 per cent). Group 4 (deep cavities, requiring tooth extractions) increased from 1.2 per cent to 3.8 per cent in the three year old group; from 5.0 per cent to 10.0 per cent in the four year old group, and from 11.1 per cent to 20.4 per cent in the five year old group.

These differences were statistically significant and, therefore, require a search of the possible causes, which probably were insufficient diet and masticatory defects. More than 25.3 per cent of all kindergarten pupils were unable to masticate properly.

Caries preventive procedures in school dental clinics must consist of (1) conservative treatment; (2) improvement and control of oral hygiene; (3) dietary control (fewer sweets), and (4) instruction of children, parents and teachers.

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**Dental health of children in the fourth
grade of four elementary schools
in Lubbock, Texas**

Mina W. Lamb and Era Ford. *J. School Health*
30:15-26 Jan. 1960

A study was made of the dental health of 381 children in the fourth grade of four elementary schools in Lubbock, Texas. The natural fluorine (fluoride ion) content of the communal water supply of Lubbock ranges from 3 to 4 ppm, depending on which of 87 city water wells are being pumped. Lubbock is in the high plains of Texas, labeled as an endemic dental fluorosis area by a survey of the U.S. Public Health Service.

Fourth grade children 8 to 14 years old were selected because they are mature enough to an-

swer questions, young enough to have deciduous and permanent teeth, and old enough to have dental caries and to give honest answers.

There was no evidence of tooth decay in 143 of the 381 children (38 per cent). Untreated cavities were noted in 214 children (56 per cent). Gingivitis was noted in 98 children (26 per cent).

Endemic dental fluorosis was apparent in the teeth of 216 children (56 per cent), of whom 23 (6 per cent) had severely mottled enamel. Of the 216 children with fluorosis, 76 per cent had brown stains. Of the 120 native children, 72 per cent had mottled enamel. Of 216 children who had lived in Lubbock longer than one year, 115 (53 per cent) had mottled enamel. Of 29 children who had lived in Lubbock less than one year, 10 (34 per cent) had mottled enamel.

Although "fluorine-controlled" water is produced and sold in the area, residents seemed to fail to understand its use. The special water was used by 33 per cent of the native-born children and 24 per cent of the children who had been in Lubbock one year or less. These latter children were eight to ten years old, an age at which the special water would not be efficacious in control of mottling. Of the 113 children using special water, 76 (67 per cent) had moderate to slight mottling.

Four of the 381 children had had eight permanent teeth extracted. Poor occlusion, teeth out of alignment, and difficulty in chewing were observed in from 10 to 19 per cent of the children. Neglected oral hygiene was observed in 44 per cent of the children.

Texas Technological College, Lubbock, Texas

Dental health education: what's the answer

Ann C. Faivre. *J. School Health* 30:86-87
Feb. 1960

Dental health education is the sum of our efforts to modify human conduct and attitudes so as to raise the dental health level of individuals and of the community.

It is a responsibility of the dental profession to help school personnel understand the dental health program. Administrators, teachers, dental hygienists and nurses should cooperate as a team with dentists.

The program should start with the individual as he is, establish what interests him and what makes him think as he does. The dental health educator must know what motivates the individuals he is trying to educate. Adults and children act on their wants as they see them, rather than on their dental health needs as seen by the dentists, dental hygienists, nurses or teachers. The dental health educator should be familiar with the different racial, religious, cultural, social and educational backgrounds of school children and their parents, because he must be able to communicate satisfactorily with all these different segments of society.

Communication becomes increasingly difficult because of the rapid growth of some communities, migration, and the fact that a community's population may no longer be homogeneous as it was several decades ago.

Dental health education might be more successful if dental health educators would find out what school children (and their parents) consider to be important and then develop ways to fit educational activities into their patterns of interest and concern.

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Dental caries and periodontal conditions among Negro children in Tennessee

Eugenia L. Mobley and Martha A. Pointer.
J. Tennessee D.A. 40:21-28 Jan. 1960

Epidemiologic characteristics of dental caries and periodontal disease were studied in 1,856 Negro children between the ages of 14 and 16 years old, residing in ten different cities in Tennessee. Among the principal observations were the following:

1. Periodontal disease affected about 88 per cent of the 1,856 children, and the incidence was highest in 16 year old rural boys.
2. The mean caries experience rate was 14.7 DMF teeth when both open carious lesions and incipient cavities were included. When the incipient cavities were not counted, the mean caries experience rate was 10.3 DMF teeth.
3. Dental caries was most prevalent among rural girls.

4. A direct relationship was found between oral hygiene and periodontal disease. About 80 per cent of those with periodontal disease had deposits of supragingival or subgingival calculus.

5. The children of both sexes in the upper socioeconomic group had less dental caries and less periodontal disease than those of the lower socioeconomic group.

6. There was no statistically significant relationship between periodontal scores and DMF rates in either upper or lower socioeconomic groups.

7. The fact that a child resided in either a rural or an urban community was not directly related to the complete caries experience or to the periodontal condition.

8. Permanent first molars accounted for slightly more than one half of the total number of missing permanent teeth. The lower right first molar was extracted or indicated for extraction more often than any of the other first molars.

9. Some unknown social factor or factors are believed to be operating. These factors play a greater part in the periodontal and caries problems than is generally realized.

School of Dentistry, Meharry Medical College, Nashville, Tenn.

Prevalence of malocclusion in American Negro children

Leonard A. Altemus. *Quart. Nat. D. A.* 18:31-36 Jan 1960

A study was made to determine the incidence of malocclusion among Negro children in the United States. In conjunction with the annual dental inspection of the children in the public schools of Washington, D.C., 3,289 Negro children between 12 and 16 years old were selected. These children had only permanent teeth. None of the children had received orthodontic treatment. The size, complexity and homogeneous nature of the sample is believed representative of the great racial mixture of the North American Negro.

The incidence of malocclusion was assessed by the method outlined by Massler and Frankel (1951); teeth that were out of normal alignment were counted, and the Angle classification was

used. Examiners were members of the orthodontic department of the College of Dentistry, Howard University.

About 83 per cent of the 3,289 Negro children examined had some form of malocclusion; about 4 per cent had ideal occlusion, and about 13 per cent had normal occlusion.

The average number of maloccluded teeth per child was six.

There is a great need for orthodontic treatment for Negro children. A survey is being conducted to determine the amount of orthodontic service being rendered by Negro dentists for Negro patients in the United States, and the results will be published.

College of Dentistry, Howard University, Washington, D.C.

Caries prevention by fluorides

Deut. med. Wschr. 85:84 Jan. 1, 1960

Q.—Recently, two articles on chronic endemic fluorosis have appeared in the German medical literature in which the authors stated that the toxic dosage of drinking water containing fluorine is from 0.3 to 1.0 ppm. The lay public may assume after reading these articles that fluoridation of the water systems by adding 1.0 ppm artificially will cause mottled enamel, especially if the fluorine intake in the daily diet is considered. Since the fluoridation of the water supplies in Kassel was initiated, a significant decrease in the incidence of caries has been observed, also in the teeth of children of parents with severe carious lesions, with no toxic effects. May I ask whether the German Medical Association accepts the opinion that a fluorine content from 0.3 to 1.0 ppm can be regarded as toxic.

A.—According to a multitude of investigations, of which the results were published in the international dental and medical literature, a fluorine content of drinking water of from 0.3 to 1.0 ppm cannot be considered as causing toxic or systemic effects even if the natural fluorine content of consumed food is taken into consideration. The natural drinking water in Germany contains between 0.2 and 0.4 ppm fluorine, and the average diet consumed daily in the form of soup, coffee,

tea, fish, and so forth, from 0.25 to 0.4 ppm. The daily intake, therefore, varies between 0.5 to 0.75 ppm fluorine. The optimal dose for caries prevention lies between 1.0 and 1.5 ppm fluorine, and cannot, therefore, be obtained by a diet especially rich in fluorine. W. Hoffmann-Axthelm, in his investigation of the effects of the drinking water of Berggiesshübel which contains from 1.0 to 2.2 ppm fluorine, found no evidence of chronic endemic fluorosis and no relationship between fluorine intake and the occurrence of struma. The artificial addition of 1.0 ppm of fluorine to drinking water obtains maximal benefits in reducing the incidence of caries in children, especially during the formative, calcification period of their teeth.

Koblenzer Strasse 100/104, Bonn, Germany

The Brantford-Sarnia-Stratford fluoridation caries study—1959 report

H. K. Brown, Hugh R. McLaren
and Myron Poplove. *J. Canad. D.A.* 26:131-142
March 1960

In 1945 the city of Brantford, Ontario, began to fluoridate its water supply with about 1 ppm of fluorine (fluoride ion). In 1946 the Department of National Health was invited to undertake a study of the dental effects by a periodic comparison of the caries prevalence of Brantford children with that of children living in a city having a naturally fluoridated water supply (Stratford, 1.6 ppm) and also with that of a city having a negligible amount of fluorine in its water supply (Sarnia). This report compares data on the incidence of caries from the first survey in 1948 and the latest survey, 1959. Since 1957 only the age groups 9 to 11 years and 12 to 14 years have been included in the study.

The percentage of children 9 to 11 years old having caries-free permanent teeth in 1948 was as follows: Sarnia, 6.13 per cent; Brantford, 5.71 per cent, and Stratford, 52.08 per cent. In 1959 the percentages were: Sarnia 8.06 per cent; Brantford, 43.82 per cent, and Stratford, 49.91 per cent.

The percentage of children 12 to 14 years old having caries-free permanent teeth in 1948 was as follows: Sarnia, 0.62 per cent; Brantford 1.18

per cent, and Stratford, 27.22 per cent. In 1959 the percentages were: Sarnia, 2.27 per cent; Brantford, 18.69 per cent, and Stratford, 28.12 per cent.

The mean number of DMF permanent teeth per child in the age group 9 to 11 years old, in 1948 and in 1959, was as follows: Sarnia, 4.21 and 3.68; Brantford, 4.07 and 1.52; Stratford, 1.13 and 1.22. For children in the age group 12 to 14 years old, the mean numbers in 1948 and 1959 were as follows: Sarnia, 7.94 and 7.46; Brantford, 7.68 and 3.23; Stratford, 2.55 and 2.33.

The percentage of children 9 to 11 years old having caries-free deciduous teeth was as follows in 1948 and in 1959: Sarnia, 33.63 and 34.36 per cent; Brantford, 34.96 and 41.83 per cent; Stratford, 40.97 and 39.66 per cent.

A few instances of very mild mottling, detectable only by an experienced examiner, were seen in children in Brantford and Stratford. Mottling to a significant or unsightly degree was not observed at any time during the study. No untoward effects which might be attributable to the presence of fluorine in the water supply ever have been reported by the medical profession either in Brantford or Stratford.

The 1959 survey findings of the Brantford fluoridation study show a continuing reduction in caries experience in Brantford children 14 years after the introduction of about 1 ppm of fluorine into the water supply. Although Stratford (which has a water supply naturally fluoridated at 1.6 ppm) still seems to have somewhat better caries levels, the Brantford-Stratford differences generally are small.

There is no doubt as to the efficacy of a water supply mechanically fluoridated at about 1 ppm in noticeably reducing the caries experience in children born subsequent to fluoridation.

Essentially, there is no difference in caries-reducing effect between a naturally fluoridated water supply and a mechanically fluoridated water supply.

No ill effects of either a medical or dental nature have been revealed by the study, or reported by the medical or dental professions, or by the health authorities in either Brantford or Stratford.

*Department of National Health and Welfare,
Ottawa, Ontario, Canada*

General

Effectiveness of mouth-to-mouth breathing as a resuscitation procedure

W. T. Ulmer, W. Ey, D. Herberg, G. Reichel and W. Schwab. *Deut.med.Wschr.* 85:63-70 Jan. 8, 1960

The mouth-to-mouth breathing method was studied during eight controlled experiments at the Otorhinolaryngologic Clinic of the University of Heidelberg, Germany.

Patients under anesthesia in whom an endotracheal tube had been used were revived by mouth-to-mouth breathing. The respiratory tidal volumes and rates were recorded in patients and resuscitators by a volumetrically calibrated pneumograph.

In all instances, mouth-to-mouth breathing provided satisfactory alveolar ventilation. The adequacy of ventilation could always be judged by the resuscitator in whom the minute volume

had not been raised to a level which could have led to the development of the hyperventilation syndrome.

The shape of the lips, teeth, lower jaw and tongue, the body type of the patients as well as the depth of anesthesia, or of the coma, are factors which influence the incidence and the degree of airway obstruction. The pharynx of an anesthetized or comatose patient may become obstructed when the head is flexed whether the patient is in supine or prone position, and whether or not an artificial oropharyngeal airway has been used.

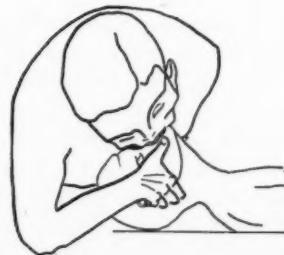
The use of an airway tube or mouthpiece connecting the patient's mouth with that of the resuscitator facilitated superior ventilation if maintained in position during the entire procedure.

Head extension and forward placement of the lower jaw proved to be essential measures to assure adequate ventilation.

Figure 1 (Right) Cleaning of the mouth



Figure 2 (Below, left and right) Position of the head during mouth-to-mouth resuscitation



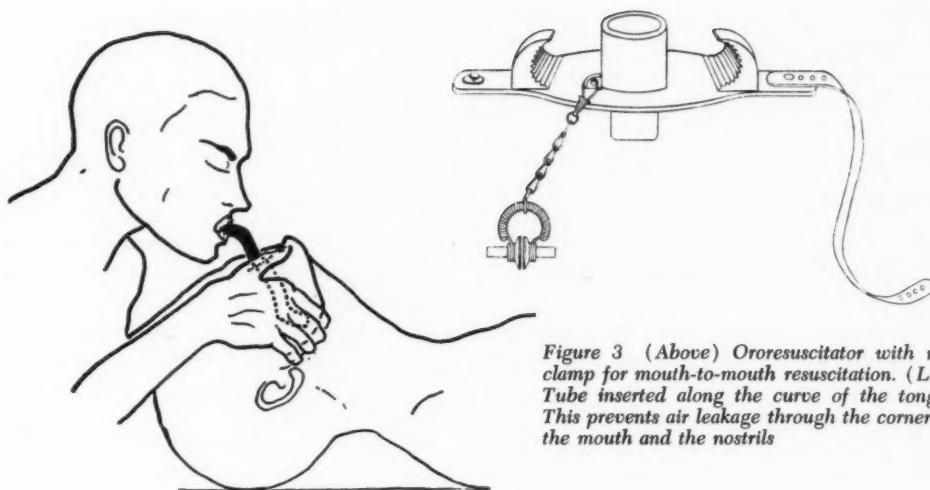


Figure 3 (Above) Ororesuscitator with nose clamp for mouth-to-mouth resuscitation. (Left) Tube inserted along the curve of the tongue. This prevents air leakage through the corners of the mouth and the nostrils

The various techniques of providing mouth-to-mouth breathing (or mouth-to-nose and mouth-to-airway breathing) were found to be superior to all methods of manual resuscitation. The often claimed stimulations of heart and circulation by manual resuscitation methods are entirely hypothetical and do not justify objections to the more efficient mouth-to-mouth breathing techniques.

The results of the study demonstrated that the manual methods frequently fail because of obstruction of the upper airway. Excellent pulmonary ventilation was obtained by mouth-to-mouth breathing without the use of an artificial airway, even in obese patients and children. In most instances, the patient's alveolar carbon dioxide level remained below normal and his arterial oxygen saturation slightly above normal because of the mild hyperventilation on the part of the resuscitator.

The ease with which the mouth-to-mouth breathing technic can be taught was demonstrated by the fact that 90 per cent of untrained rescuers were able to perform the procedure satisfactorily after a single demonstration.

The study also indicates clearly that the mouth-to-mouth breathing technic should be taught at dental and medical schools and be used generally on both adults and children.

Hunscheidtstrasse 12, Bochum, Germany

A report on the role of the dental hygienist in schools

J. School Health 30:182-195 May 1960

This pilot study is based on data from questionnaires returned by 201 school dental hygienists, of whom 67 per cent were from the states of New York, Pennsylvania and Connecticut.

Twenty-nine per cent of the 201 hygienists had completed one year of college; 34 per cent, two years; 13 per cent, three years; 19 per cent, four years, and 5 per cent, five or more years.

Seventy per cent of the respondents stated they had taken their last training course within five years.

Twenty-five per cent of the respondents were members of the American Dental Hygienists Association; 9 per cent were members of the National Education Association, and 9 per cent were members of the American Association of Health, Physical Education and Recreation.

Eighty-five per cent of the respondents were employed by boards of education, and 13 per cent by boards of health.

Twenty-seven per cent were earning between \$3,000 and \$3,999 annually; 35 per cent, between \$4,000 and \$4,999; 26 per cent, between \$5,000 and \$5,999, and 7 per cent, \$6,000 and over.

Thirty-seven per cent of the dental hygienists were responsible for pupils in ten or more schools, 38 per cent for pupils in from five to nine schools, and 25 per cent for pupils in fewer than five schools.

Thirty-three per cent of the hygienists were serving between 1,000 and 1,999 pupils; 26 per cent, between 2,000 and 2,999; 14 per cent, between 3,000 and 3,999; 10 per cent, between 4,000 and 4,999; and 11 per cent, for 5,000 pupils or more.

Forty-six per cent of the school dental hygienists provided inspections only to primary school and junior and senior high school students. Seven per cent provided prophylaxis only; 38 per cent provided both inspection and dental prophylaxis, and 8 per cent of the school dental hygienists provided inspection, prophylaxis and topical fluoride treatment.

Sixteen per cent of the hygienists provided chairside instruction, 14 per cent performed classroom teaching, and 28 per cent provided both chairside instruction and classroom teaching.

Forty per cent of the hygienists had regularly scheduled classroom assignments and 47 per cent had occasional classroom assignments.

Of the 292,769 children for whom the hygienists were responsible, 52 per cent received dental service from private dentists, 6 per cent received dental service from clinics, and 42 per cent received no dental care.

Few states have specific policies or statutes defining the functions of the dental hygienist in the schools.

More emphasis must be given to dental health education for school children. The average child is not sufficiently motivated regarding dental care. The children in almost half of the 2,613 grades represented had received no instruction in dental health.

Dental health is related to all areas of school health, including administration, instruction, environment and services. Greater interest should be focused on improving interstaff communication and promoting programs by enlisting the aid of others in the school and community. A large percentage of dental hygienists do not meet with faculty, dentists or nurses.

Ross E. Gutman, 13 Kenaware Avenue, Delmar, N.Y.

Asepsis and antisepsis in dentistry

Sydney D. Rubbo. *Austral.D.J.* 5:61-69 April 1960

Asepsis is the prevention of infection by the removal, destruction and exclusion of pathogenic microorganisms for living tissues. Antisepsis is a more restricted term, used to describe the prevention of infection of superficial tissues by the topical application of chemical agents. Antisepsis is one of the components of asepsis.

The important principle governing asepsis in dentistry involves breaking the pathways of infection not at one but at many points, not by one but by many technics.

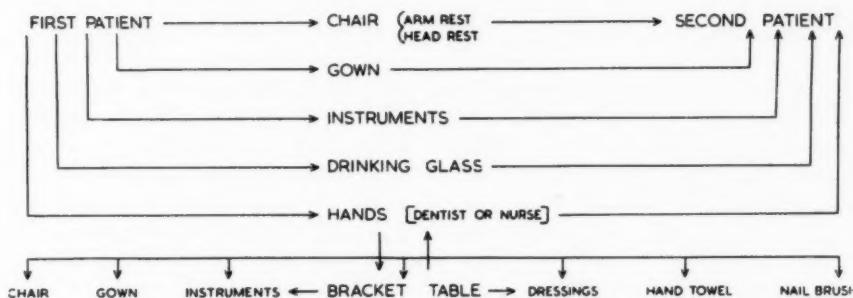
Exogenous infections in dental practice arise largely, if not entirely, from contact infection, direct or indirect. Air-borne infection probably is of minor importance. Although the schematic representation (see illustration) of the transmission of infection in dental practice may be an oversimplification of the problem, it helps to focus attention on five distinct pathways of transmission of infection from one dental patient to another.

It is obvious that the dental chair, particularly the armrest and headrest, is being contaminated continually and so provides a reservoir of infection which may directly or indirectly be brought in contact with the patient. The headrest usually is more heavily soiled than the armrest. To reduce the degree of contamination of the dental chair, two simple aseptic technics can be used: (1) cover the headrest with a disposable paper towel, and (2) disinfect the armrest and headrest with a chemical disinfectant applied either by a swab or as a spray. The author is experimenting with an alcoholic solution of 0.5 per cent chlorhexidine (Hibitane), which has been found to give immediate and persistent sterility for about two hours to surfaces on which it is sprayed. Alternatively, the surfaces may be swabbed with 0.5 per cent chlorhexidine in 70 per cent alcohol.

The gowns of the dentist or his assistants do not become as heavily contaminated from the oral cavity as one might expect. The contamination which does occur, however, can be eliminated by spraying the gown *in situ* two or three times a day with the alcoholic chlorhexidine solution.

Most dental instruments can be sterilized by

PATHWAYS OF CONTACT INFECTION



Schematic representation of the transmission of infection in dental practice

autoclaving, some by dry heat in a Flaherty sterilizer, and others by propylene oxide gas. However, it is not recommended that dental instruments be disinfected with boiling water or chemicals. The use of alcoholic solutions for sterilizing needles and syringes is dangerous, in that the alcohol coagulates protein and hence fixes viral particles in inaccessible sites without destroying their viability. Since the incubation periods of infectious and serum hepatitis are about 30 to 100 days, respectively, the causal relationship between a visit to the dentist and the development of jaundice may be easily overlooked.

The drinking glass as a link in the infection chain can be eliminated by replacing the glass tumbler with disposable paper cups.

The dentist's hands occupy a key position in the transmission of infection. The author recommends a two to three minute, no brush scrub-up. The hands should then be dried on a sterile or freshly laundered towel, and a hand lotion containing 0.5 to 1 per cent chlorhexidine should be applied. The fluid base of this lotion is slightly viscous, pleasant to the touch and evaporates almost instantaneously without leaving the skin unduly dry or sticky. This lotion gives immediate sterilization, and resists recontamination from salivary flora for at least one hour. The use of such a hand lotion would go a long way toward improving asepsis in dental practice.

The bracket table can be disinfected with a solution of 0.5 per cent chlorhexidine in 70 per cent alcohol. Hand towels can be replaced with

disposable paper towels. The nail brush can be discarded or it can be stored in Dettol solution.

The foregoing recommendations concern the dental management of the healthy patient. The tuberculous patient presents a special problem requiring the use of gloves, masks and a change of gown.

University of Melbourne, Carlton N.3, Victoria, Australia

Vitamins in beer

H. Gebauer. *Pharmazie* 4:224-225 Oct. 1959

Biochemical analyses of various brands of German beer revealed that they all have a relatively high content of vitamins, especially of vitamin B complex.

Experiments with animals demonstrated that a definite increase in growth, confirmed statistically, occurred after comparatively small quantities of beer were added to the otherwise normal diet.

Microbiologic assays of the brands of beer investigated gave the following vitamin values per liter: from 9 to 700 micrograms vitamin B₁ (thiamine); from 140 to 800 micrograms vitamin B₂ (riboflavin); from 8.5 to 23 micrograms nicotinamide; from 0.6 to 2 micrograms pantothenic acid, and from 180 to 1,700 micrograms vitamin B₆ (pyridoxine).

The partial sterilization of beer at a temperature of 60°C. (pasteurization) did not significantly change its chemical composition, and

produced only an insignificant decrease in its vitamin contents.

Jens Waerhaug (1958), W. Robertson and B. Schwartz (1950) and J. R. Penney and B. M. Balfour (1949) have demonstrated that avitaminosis or a disturbed utilization of vitamins (especially vitamin B complex) exerts an unfavorable effect on the supporting structures of the teeth. The high biologic value of beer as demonstrated by the microbiologic assays, and by the author's studies with dental patients and experimental animals, seems to be capable of producing improvement radically and rapidly in all instances of oral involvement associated with avitaminoses.

Although the histopathologic picture of the periodontal structures in patients with vitamin deficiencies does not resemble that of periodontal disease, in patients with oral symptoms suspected of having been caused by avitaminoses (especially deficiency of vitamin B complex) the use of beer as an adjunct to the normal diet and the usual vitamin therapy can be recommended.

Neue Grünstrasse 18, Berlin C 2, Germany

Oral complaints and taste perception in the aged

Theodore Cohen and Leo Gitman. *J. Gerontol.* 14:294-298 July 1959

To explore the possibility that the ability to perceive specific tastes is impaired with age, 248 institutionalized residents ranging in age from 65 to 94 years were tested on their ability to recognize the basic tastes of sour, sweet, salty, and bitter. Control subjects consisted of a group of 45 men and women between the ages of 18 and 39 years, and a group of 55 men and women between the ages of 40 and 64; both control groups consisted of noninstitutionalized persons.

The substances and concentrations used were saccharine 0.25 per cent, sodium chloride 1 per cent, quinine sulfate 0.14 per cent, and acetic acid 5 per cent. All tests were performed midway between meals. Solutions were used at room temperatures. Dentures, if present, were removed. The patient's mouth was rinsed with tap water before and after each test. A cotton swab was saturated with the test solution and wiped across the dorsal, posterior and lateral surfaces

of the tongue. The subject was permitted to withdraw the tongue into the mouth and was immediately asked whether the solution tasted sweet, sour, salty or bitter. If there was any hesitancy, the same solution was reapplied two more times, alternating with another flavor and the usual rinsing. If two out of three responses were incorrect, this was regarded as an error.

None of the subjects in the control groups had complaints referable to taste. In the experimental group, 38.9 per cent of the women and 25.0 per cent of the men had such complaints. The complaints most frequently mentioned were failure to recognize sour and bitter.

The incidence of test errors in subjects under 65 years old was 17 per cent. The 10 per cent increase of test errors in the experimental group was not significant statistically.

It was concluded that, although complaints referable to taste perception are far more frequent in the aged than in younger persons, such complaints bear no relation to the person's ability to recognize the basic tastes. There is no significant decrement in gross taste perception with aging. Men show a significantly higher incidence of taste error than do women. The highest incidence of errors occurs in testing for sour. The percentage of error for any specific taste is similar for all ages. Multiple errors occur in comparatively few persons. No correlation was found between the use of dentures and the incidence of complaints or test errors.

Brooklyn Hebrew Home and Hospital for the Aged, Brooklyn 12, N.Y.

Bactericidal ultraviolet radiation in the operating room: twenty-nine year study for control of infection

Deryl Hart. *J.A.M.A.* 172:1019-1028 March 5, 1960

The so-called unexplained infections in clean operative wounds have been eliminated, to a great extent at the Duke Hospital in Durham, N.C. A variety of measures were initiated aimed at limiting the contamination of the air with pathogenic microorganisms and ultraviolet radiation was used to destroy the remaining microorganisms.

The spread of viable pathogenic microorganisms in operating rooms, regardless of their origin, was reduced greatly. The air route of bacterial spread must be considered as the major factor in the contamination of clean operative wounds and, therefore, responsible for the increased incidence of the so-called unexplained postoperative infections.

Despite the comparatively high incidence of operative wound infections reported in the literature, the universal air contamination in operating rooms, dental and medical offices and the proved effectiveness, safety and ease of use of ultraviolet radiation, the part played by contaminated air in the development of postoperative infections is frequently ignored.

The use of inadequate masks produces a false sense of security because such masks may stop the large droplets but not the nuclei of microorganisms which have contaminated the air. The use of air conditioning does not reduce adequately the air contamination in operating rooms. Adopted mainly for cooling and humidity control, air conditioning may reduce the amount of bacteria-laden perspiration during the hotter months but does not destroy bacteria that inevitably infect clean operative wounds and exposed surfaces.

It should be evident that only complete control of the bacterial spread by way of the air, during and after an operation, can protect the open wounds from heavy inoculation with exogenous pathogenic microorganisms regardless of their source (respiratory tract, contaminated rooms, the patient's clothing, linens or blankets, the air from other areas or the air delivered in a contaminated condition by the ventilating system). Because contact inoculations have been eliminated by ultraviolet radiation, sterilization of the air will close the last big gap in the aseptic techniques.

Before 1936, it was impossible to prevent a high percentage of infections in clean operative wounds, especially those caused by antibiotic-resistant staphylococci. After the use of ultraviolet radiation to control the spread of airborne microorganisms, the operating room infections have been all but eliminated. At the Duke Hospital there are now 15 operating rooms equipped with bactericidal ultraviolet radiation.

On the basis of the experience in continuous control of these infections over a period of 29 years, without permanent or serious injury to patients or personnel, the use of bactericidal ultraviolet radiation can be highly recommended as a valuable addition to aseptic operating room techniques.

Department of Surgery, Duke University School of Medicine, Durham, N.C.

Alumni sketch: See Sirisinha, D.D.S.

Norman Whytock. *Penn D.J.* 63:93-95 Feb. 1960

When See Sirisinha returned to his native home, Thailand, after his graduation from the University of Pennsylvania School of Dentistry, he tried, without success, to interest the government in creating a dental school. He worked in hospitals, served a year in the army as a lance corporal, and then developed a dental practice which he had purchased from an American dentist.

Invited by the director of the Army Hospital to meet the premier, Dr. Sirisinha persuaded the premier of the need for a dental school in Thailand. By decree, dentistry was added to the curriculum of Chulalongkorn University. Col. Waht Yemprayura, director of the Army Hospital, became head of the new dental department, and Dr. Sirisinha was asked to take charge of all dental subjects. The new school opened in 1939 with nine students and three instructors.

Dr. Sirisinha also became the premier's dentist. Just before World War II, Dr. Sirisinha was recalled to the army. The premier, who also was commander in chief, one day asked his dentist to attend him. When Dr. Sirisinha reported in his uniform of a corporal, the premier was shocked, and issued instructions to make Corporal Sirisinha a captain; after a year the captain became a major, and, a little later, a lieutenant colonel. Because of the shortage of dentists, he was allowed to work half of each day as a private practitioner, and the other half in the service of the army.

At the conclusion of the war, the buildings of the war-damaged school had to be renovated and the dental equipment replaced. Dr. Sirisinha devoted himself to this task, obtaining help from some of his American patients, from the United States government and from Australia. After re-

construction, the school had 85 dental units and chairs.

In 1955, Dr. Sirisinha became dean of the School of Dentistry, now affiliated with the University of Medical Sciences in Bangkok. Recently, Dean Sirisinha has sought to obtain fellowships for graduate work for his faculty, and to enrich the scientific content of the courses.

Asked to compare dental students in Thailand and in the United States, Dean Sirisinha observed; "The students here are not as serious minded as those in your country, they have an easier life. . . . First, the school is government controlled; the students do not have to pay any tuition fees, they pay only for the health, library and athletic fees. Most of the instruments are loaned to them, they hardly pay more than \$100 for the instruments during their four years of study, and all the fees they have to pay do not amount to more than \$30 a year. When they finish, if they are not too choosy, they can get a job in the government service. Very few of them ever venture out into private practice; this is because you need a lot of capital for setting up an office. . . ."

School of Dentistry, University of Pennsylvania, Philadelphia, Pa.

Reduction of radiation hazards to personnel using interstitial implants

Oscar L. Morphis. *Texas J. Med.* 56:27-30
Jan. 1960

During the preparation and implantation of multiple radium needles, the technicians, operating room personnel, and particularly the practitioner implanting the needles may be exposed to a high level of gamma radiation.

In the operating room, the needles must be laid out in orderly fashion, and brought from the back table to the operating field as needed. The operator implanting the needles must have his hands near the point of entrance and must feel the tip of the needle to be certain of its course. This results in close approximation of the examining fingers to the needle. The needles must be sewed to the tissue and anchored, and this results in additional exposure to radiation.

The dosage may be reduced: (1) by keeping the total quantity of radium small and out of the operating field as long as possible; (2) by adding a lead protective barrier between the radium source and the operator; (3) by increasing the distance between the radium sources and any member of the operating team, and (4) by decreasing the time that the operating team is exposed to the radium. A technic, utilizing the third and fourth points, has been used in operating on more than 150 patients during the past 33 months.

Teflon tubing fixed to a longatraumatic needle from six to nine inches long is sewed through the base of the lesion and the entire radiation pattern completely sewed into place. The point of entrance and the point of exit are constantly in view so that proper alignment and spacing of the tubes is easily attained. The fingers feeling the path of the needle are in no danger since the radium need not even be in the operating room while this procedure is carried out. One end of each Teflon tube is sealed with a Michel's clamp. At this time, the radium is first brought into the operating field. The end of the tube is held open with a special forceps, the radium is picked up with a radium forceps and placed in the Teflon tube eye end first. A long stylet is used to push the needle into proper position. As many needles as may be needed to fill the tube may be used. The loading end of the tube then is sealed with a Michel's clamp. After the last tube has been filled and sealed, the operation is complete. Most procedures carried out in this manner expose the operator to radiation between five and ten minutes, and result in doses to the operator of less than 50 mr.

At the end of the period of radiation, one of the Michel's clamps is cut off and the entire tube with its radium content is removed. The technician cuts off the other Michel's clamp and pushes the radium from the tube with a stylet. The needles are washed and returned to the radium safe.

Ten cases are reported and illustrated. Some of the cases involve the use of implanted radium needles in the treatment of carcinoma of the tongue and cheek.

815 Medical Arts Building, Fort Worth, Texas

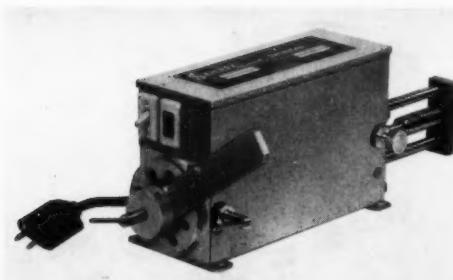
New equipment

The information reported here is obtained from manufacturers. Dental Abstracts does not assume responsibility for the accuracy of the information. The interested reader may direct his inquiry to the manufacturer.



A new, fast way to make spare dentures economically does not require flasking or use of an extra set of teeth. The "Getz" denture duplicating kit contains everything needed to make from 35 to 40 duplicate dentures, it is claimed. The kit contains light, medium and dark tooth shade powders; plain and fibered self-curing denture base powder; self-curing, cross-linked, color-stabilized liquid; a stainless steel mixing spatula and a folder with directions. The duplicate denture can be constructed directly in an alginate impression made of the original denture. *William Getz Corp., 7512 S. Greenwood Ave., Chicago 19, Ill.*

A new amalgam carrier and container are said to solve many of the problems related to these dental instruments. The carrier has a full-length, flexible, non-kinking nylon plunger. Mercury and amalgam will not stick to the barrel or plunger, it is claimed. The "Klean-Mix" capsules have a ruby hard surface said to prevent leakage. The mix pours easily and the capsule is ready immediately for the next mix, according to the manufacturer. *Surgident Ltd., 3871 Grand View Blvd., Los Angeles 66, Calif.*



The Sandex wax extruder, for use by dentists and dental laboratories, is a compact, air-operated machine with an electrically heated wax well. The head is adjustable to produce a variety of wire wax shapes. A dial controls the shape of wire wax required, and a lever actuates a hydraulic cylinder. The unit can be attached to any flat surface. *Sandex, Inc., 678 Berrian St., Brooklyn 8, N.Y.*

The "Venti-Breather" oral resuscitator is a new device which permits mouth-to-mouth rescue breathing by untrained persons without necessitating oral contact with the victim. The flexible face mask fits both adults and children. The rescuer breathes through a tube to inflate the victim's lungs; as the victim's lungs deflate, a one-way valve directs his breath away from the rescuer's mouth and face. The Venti-Breather is said to be effective, simple and economical. *Venti-Breather Products, Inc., 725 Fifteenth St., N.W., Washington 5, D.C.*



Doctoral and Masters' dissertations

In this column each month are listed recent Doctoral and Masters' dissertations of dental interest, accepted by the dental schools or graduate schools in partial fulfillment for advanced degrees. Copies of many of these theses are available from the schools through interlibrary loan.

Studies on hardness and abrasion resistance of acrylic resins. *Dioracy Fonterrada Vieira.* 1960. M.S.D. *Indiana University.*

An electromyographic study of denture patients with cusped or cuspless teeth. *Charles Kent Hitchcock.* 1960. M.S. *Northwestern University.*

A radiographic cephalometric analysis of velopharyngeal valving during phonation of certain consonant sounds in young children. *George How ard.* 1960. M.S.D. *Northwestern University.*

An electromyographic investigation of the perioral and suprathyroid musculature of repaired cleft palate and normal individuals. *Harold William Just.* 1960. M.S.D. *Northwestern University.*

A study of the epithelial attachment and free gingiva following the depression of teeth in dogs, using orthodontic procedures. *Michael Morris Krop.* 1960. M.S.D. *Northwestern University.*

A study of the free gingivae following the forceful eruption of the lower second incisor of the dog. *John Albert Maddrell.* 1960. M.S.D. *North western University.*

A radiographic cephalometric analysis of internal and external lip contours and relations in the mid-sagittal plane in excellent occlusion of the teeth. *Daniel S. Meister.* 1960. M.S.D. *Northwestern University.*

Disturbances in the lipoid metabolism occurring in different members of a family: report of two cases of Niemann-Pick disease in siblings (Störungen des Lipoidstoffwechsels in verschiedenen Mitgliedern einer Familie: Mitteilung von zwei Fällen der Niemann-Pickschen Krankheit bei Geschwistern). *Margarete Heinrich.* 1959. DR. MED.DENT. *University of Cologne, Germany.*

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